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PROPHYLACTIC MEASURES GUARDING AGAINST THE DEVELOPMENT OF LANDAU CASES OF VISCEROPTOSIS.

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Pregnancy is a factor of importance in the production of Glénard's disease, which really is more of a condition than strictly a disease. Of itself, pregnancy and the resulting states of the abdomen therefrom is not sufficient to actually cause the production of the entire picture of abdominal viscera prolapse with symptoms. These cases are usually preceded, before pregnancy, by a more or less prolapsed state of organs and a more or less state of debility or disturbed nutrition due to constitutional or local causes. Then with the presence of a tendency to further prolapse, pregnancy is often the factor in the development of subjective symptoms in organs which before this had carried on their functions satisfactorily, and without knowledge to the patient that anything had been radically wrong in the abdomen. These cases are called the Landau cases, because first described by him. To the extent of the commonness of these cases (they make up a large bulk of the abdominal cases in women in our clinics to-day) enough attention to the remote aftermaths of pregnancy is not given by the average accoucheur in charge of his labor cases, upon whom after all, in addition to his midwifely duties and surgical attentions in the case, rests also the responsibility of the mother's complete after health in so far as all bad legacies from her pregnancy are concerned. My observation, from a gastroenterological standpoint, has convinced me that with the addition of a few logical rules to the postpartum care of the mother, all of which are easily carried out by the patient herself, much good could be done and the number of these cases made perceptibly fewer.

It requires more than simply a relaxed condition of the abdominal parietes, *per se*, in Landau splanchnoptosis, to account for ptosis with symptoms, and while, with proper sustaining support to the abdomen, these cases are manifestly improved, still we are treating with only one part of a state complex, to which the pendulous abdomen is only a concomitant. The study of ptosis, in men and in nulliparous women, exhibits too often a predisposing heredity (the neurotic, neurasthenic, and alcoholic parents being fruitful progenitors); a poorly nourished and rachitic infancy and childhood; too little of God's sunshine and fresh air in the formative and early adolescent years of life (for it requires about two thousand cubic feet of air to pass through an adult's lungs daily to furnish sufficient oxygen to maintain good digestion and nutrition); some long-standing improper habit in the quality and quantity of foods, regularity of eating time, prepara-

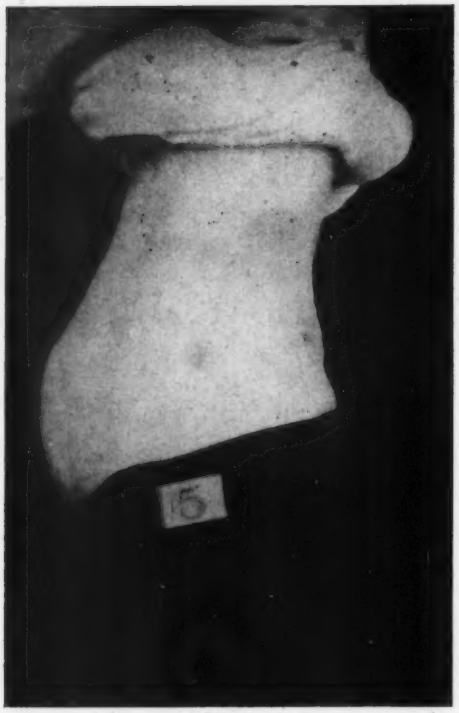

FIG. 1.—Clinic case of Landau. Mrs. A. M., 28 years old. Family history negative. Personal history good, in so far as digestive organs are concerned. Bowels had always moved daily before labor. Primipara, delivered by midwife December 12, 1906. Labor normal. Child weighed 8 pounds. Bandaged indifferently for one week, not afterward. At her domestic duties on the tenth day. Symptoms of illness came on two months after delivery. Photo shows the concavity of the abdomen above the umbilicus and the bulging of the lower zones. There was but little contractile and sustaining power in the walls above the navel. Below the navel the contraction was more pronounced. She had very poor control over the musculature of the abdomen. When examined three months after delivery she had marked gastric stagnation with accompanying symptoms. Bowels strongly constipated. Had constant pain in the back and right iliac region; was unable to work, and had to rest on her back most of the time to get relief. She was practically an invalid.

tion of food or its proper mastication; or some general constitutional debilitated state of health, from whatever cause, to accept relaxation of the abdominal walls as other than a concomitant rather than a primary cause of ptosis. Still I feel that in post-puerperal cases this order may be somewhat reversed by there being left an overdegree of flaccid, stretched-out, and weak walls, a parietal subinvolution if you please, encouraging further descent of the viscera within and the development of symptoms by the breaking down of the prior state of existent digestive compensation, as the accompanying case (see Figs. 1 and 2) plainly shows.

The gravid uterus at term occupies practically all of the possible space in the abdominal cavity, particularly in the prone position. It reaches superiorly close to the under surface of the liver, and in breadth almost to the limits of the lateral confines of the abdomen. In the upright position the intestines are posterior to the uterus; in the dorsal position they lie chiefly to the sides, but partly too in front of the uterus. In the upright position the uterus in advanced pregnancy rests upon the anterior abdominal walls, the component tissues of which are immensely stretched and somewhat thinned. The fasciculi of the recti and side muscles increase in length, slightly in thickness, but not in numbers. The joining borders of the recti, especially below the umbilicus, separate, causing a weak space in the fore

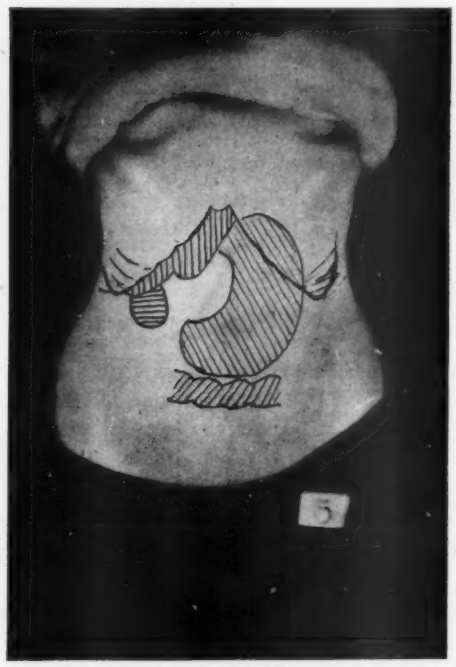

FIG. 2.—Same case, showing the degree of descent of the stomach, colon, liver, and right kidney.

wall of the abdomen, which persists more or less after the delivery.

In even the most favored cases a certain degree of relaxation of the abdominal parietes, with some accompanying degree of ptosis, persists after a pregnancy. In a strong, well-nourished woman this goes on without the development of any subjective symptoms and may be considered physiological. But under less favorable conditions there is always a danger, in some women, of the loss of sufficient sustaining power of the walls, persistently encouraging still more descent of the organs within. The recti are the big factors in this, the lower segments of which muscles are usually found bulged forward and the upper segments loose and flaccid. Thus here we often see the mechanical element of cause found in these cases.

Another basic cause in Landau cases, as well as in all cases of ptosis, is subnutrition. The pressure of the gravid uterus on the digestive organs gives rise to many functional disturbances. There is diminished intestinal activity affecting the digestion of food, and being more commonly the cause of constipation than obstructive pressure of the uterus. The blood changes incident to pregnancy may also affect the nutrition unfavorably. In the early months there is a hydremic condition of the blood, and it is always questionable if the enriching of the blood in advanced pregnancy, in hemoglobin and total number of red blood cells, is equal to the greater demands that are made upon them. There is generally more or less vomiting and gastric disturbance, due to spasmodic contractions of the stomach and diaphragm. The vomiting may be severe and persistent enough to keep the woman under-nourished for some time. The vital capacity of the lungs is diminished, interfering with the proper oxygenation of the blood. The taste and smell are often affected, so that there may be repugnance for foods of the best kind, and there is often found insatiable demands for foods of a low nutritive value. To all these there may be added a length of intoxication of the body due to the pregnancy and more or less impairment of the renal function. And lastly, to the mechanical and nutritional changes are added the nervous ones, making complete the great triumvirate so often seen in cases of abdominal visceroptosis. The nervous system during pregnancy becomes impressionable, so much so that in some women already so predisposed it may terminate even in insanity, and how simple it is to understand that the great factor of neurosis in digestive disturbances could easily make its beginning here.

It is interesting to observe that in the histories of 86 clinic cases of women who had been pregnant which have come under my personal observation for continued treatment for some digestive disorder, in 21 of them a resulting state from pregnancy was believed to be the weight that threw over their former balance of health. Of these 21 cases, 15 were primiparas and 6 were multiparas. Of the 15 primiparas, the average age of which at the time of their delivery was twenty-two years, the average length of time for the development of subjective symptoms was 5½ months after parturition. Taking the single-child cases, for they are the best for the point of this paper, they were all cases of plainly evident visceroptosis of one or more of the abdominal organs, combined with various disorders of motor, secretory, and sensory origin. They were all examined by the usual methods, such as external physical measures, test meals, lavage of the jejunum, inflation, transillumination, and *x*-ray, and all but two improved under the accepted modern methods of therapy for gastroptosis, using that term in its broadest sense.

Questioning these women closely, I have learned that the advances which the study of digestive disorders has made in late years have added but little to the common practice of obstetricians to-day above ten years ago, particularly those who practice among the poorer class of people. In my

opinion none of these women had been watched long enough or closely enough to guard against the dangerous aftermaths of their pregnancy. One woman wore an abdominal support for six weeks after her labor, but she did this because she found it most helpful to her, and even against the advice of her physician; the rest practically not at all after the first few days. As far as I was able to learn, the usual practice of the attendants, in so far as the abdomen was concerned, in an uncomplicated postpartum after the first three days of fluid diet, was the giving of a purge, a most excellent practice, followed by the more substantial diet. There were two or three quick examinations of the abdomen to observe the downward course of the fundus uteri. When this was no longer felt above the symphysis pubis, and the lochia had ceased to be sanguineous in character, the patient was permitted to leave her bed, at which time the attendant usually concluded his visits to the woman, whom he might not again see for months afterward. Is this all that is expected of us as physicians? Our clinics have proved otherwise.

An abdominal cavity that has been subjected to a rising internal pressure for months, when suddenly collapsed, from whatever the cause, suffers a shock. What other explanation can be given to the chill immediately following delivery? Then come the long days of slow return of the walls and their contents to the normal condition. In this light where is contained the wisdom, in the growing custom of late years, in advising against the use of the old-fashioned binder after delivery, which did so well in equalizing the lowered intra-abdominal pressure by its support to the walls? The only reason I have been able to obtain for this change in practice is that a tight-fitting bandage is liable to malpose the uterus and thereby possibly favor the establishment of some permanent malposition of this organ, or that the binder was very liable to be soiled and therefore uncleanly and unsurgical. The first is about as absurd as the second is indicative of neglect. It is true that at our postpartum visits the binder is usually found loose and above the iliac crests; but is not this due to carelessness on our part in failing to instruct the nurse how to properly apply the bandage? That it is an uncomfortable appliance to the woman is not borne out by her statements, who if anything gladly welcomes the support that it gives even to the very end of resolution, which in a normal case usually takes about six weeks' time. And the last prop is knocked from under the argument when it is contended that it is too warm and distressing a thing for his patient to keep on in summer, when the thinnest skirt she ordinarily wears is not any cooler.

As soon after delivery as possible, in all cases, a bandage should be put on. It should be wide enough so as to extend from the middle third of the thigh to the ensiform process. It should be shaped to the abdomen by being tucked at the sides from above downward, and be boned in the back, at the sides, and in front so that it stays in place. At intervals during the postpartum the abdominal wall should be examined to note its muscular power, its tone, and general condition. This is best done while the patient makes efforts at straining as if at stool. Attention should be paid that the bowels move freely and that gases are not permitted to accumulate in quantity. The bandaging should be kept up for at least two months after delivery, and for four or six months in cases in which the abdomen is inclined to remain loose and pendulous. After she is about an elastic belt may be used instead of the muslin bandage, which is not so comfortable for locomotion. When there is a danger of ptosis, a strong, well-fitting belt should be worn; one such as the kind I ordinarily use in Glénard's disease is good. This belt possesses an advantage over others in that in addition to its support to the abdomen it raises the lower abdomen upward as well as backward, by

the use of what may be called an artificial mesentery, an elastic strap which tends to approximate the lowest point of the belt in front to the highest point of the belt in the rear. This strap is adjustable to different degrees of tension. The belt itself is especially constructed to take this low and high position, as shown in Fig. 3. There are some who contend that an abdomen so supported for a length of time loses its tone and afterward becomes dependent upon such support. But as the bandage or belt does not interfere with the action of the abdominal muscles, and as a support from without neutralizes the further baneful *vis a tergo* of the sagging viscera within, this contention is not well taken. If any effect is seen by its continued use it is one of added tone and benefit. I am not averse to a belt being worn for six months after delivery in all slim women.

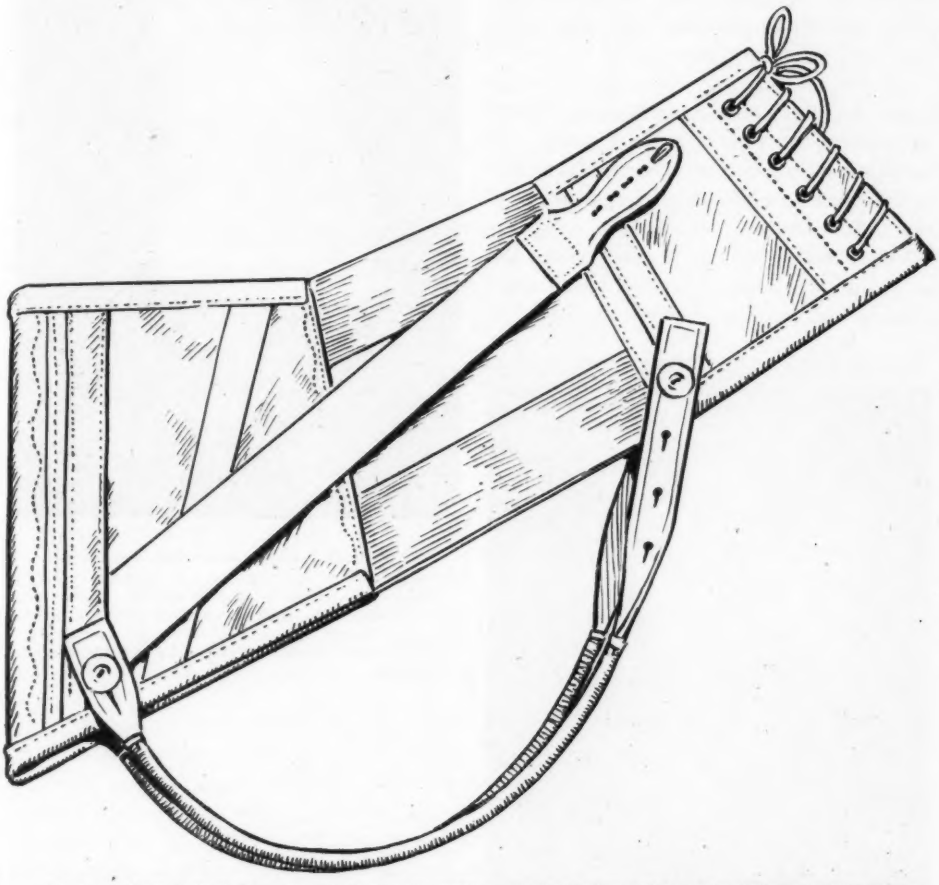

FIG. 3.—Author's belt, showing mesenteric strap in position. The body of the belt is constructed so as to take a very low purchase in front and the highest possible point in the rear, which is generally gauged by having the top of the back of the belt fit well into the waist line. The front and back are made of inelastic material; the mesenteric strap and side are made of elastic webbing. The body of the belt must fit snugly and evenly with the perineal straps (which are indispensable), just taut enough to keep the belt from riding.

At such times as it is deemed advisable, efforts should be made, in all postpartum women, particularly where there is danger of a pendulous abdomen, to strengthen the muscles by exercises, the most valuable of which is for the patient to make, often dur-

ing the day, voluntary contractions of the abdomen as a whole. While difficult at first with most women, the art of doing this is soon acquired. The patient's attention should be directed to the lower abdominal zone, and she should try to flatten, by a slow, strong, and deliberate effort, all of the abdomen below the navel. They all soon get control of the lower segments of the recti, etc. This exercise can easily be carried on in bed, and should be kept up for several weeks at least. The only other exercise possible while in bed is the raising of the body to a sitting position. To do this properly the lower extremities should be held down. When she is about, this is best done by the woman putting her feet under some piece of furniture, raising herself from the floor with her arms extended over her head. The third best exercise is the raising of the lower extremities, back on the floor, in stout women, to the vertical position; in slim women the toes may be made to touch the floor over the shoulders. The fourth and fifth movements are carried on while standing with heels together. They consist of a rocking motion down from side to side and a twisting motion of the trunk, first one shoulder forward, then the other. In loose clothing these movements should be carried out mornings before the belt is put on, and evenings after it is taken off for the night. In imminent cases they are very valuable measures and should be insisted upon strongly. Figs. 4 and 5 show the best and the poorest results, configura-

FIG. 4.—A private case, showing the development of the abdominal muscles from exercise. E. L., aged 26 years. Primipara. Delivered August 1, 1906. Normal labor of eleven hours; slight perineal laceration; child weighed 7½ pounds. Kept up her exercises for five months after delivery; gained 10½ pounds. Photo taken 7¼ months after confinement.

FIG. 5.—Private casethat showed the poorest abdomen and the least gain in weight. Primipara, 27 years old. Delivered January 3, 1907. Infant weighed 7¼ pounds. In labor three hours. Photo taken three months after delivery, showing the long, narrow abdomen with still good configuration. Woman perfectly well. Discarded the bandage, but still exercising.

tively speaking, of the abdomens of the women who exercised.

Abdominal massage, electricity, and hydropathic measures, I merely mention as not deserving of much attention in the routine of these cases.

In all cases of women who have been delivered, and for many weeks afterward, the diet should be of the highest nutritive value and pushed to the very limit of digestive capacity. The meals should be small in bulk and frequent. Food every three hours is not any too often in an imminent case. When the patient is about, and taking her three meals a day, supplemental meals of milk, eggs, bread, butter, and so on should be advised. When the danger of ptosis is great the giving of much fluid should be guarded against. The choice of food should be liberal; it is often wise to disregard any mild dyspeptic disturbance and feed the woman generally as well as generously, or she runs the danger of being underfed. It is best to lay out a plan of diet, with the quantities, and insist upon her meeting it. The main purpose of the diet is to add rapidly to her weight. The carbohydrates are strong factors in this. This forced feeding is also of value to nursing women and in the anemic and poorly developed.

It is often beneficial to make the mistake of keeping the woman in bed too long. She should be encouraged to rest after her heavy meals for some time, and warned against any fatiguing or violent efforts for two months. In cases in which the abdomen remains pendulous, and the walls are weak, it is wise to advise a morning and afternoon rest of two hours, with the buttocks raised so as to have the viscera gain a higher level in the abdomen. Another good plan is to have her sleep for some weeks in a bed raised at the foot end.

In the past fifteen months I have interested myself in thirteen first-baby cases, in all of which the above plans were carried out. Up to the present time none of these women have had any significant digestive disturbance, and in all of them their abdominal walls are in fine condition. Their gains in weight ranged from seven to thirty-one pounds; none failed in showing some gain. Of the seven who may be classed as neurotics, in six their nervous condition had been much benefited by the rest and diet. Three of them were tubercular and one probably syphilitic; they also were better in health than they had been before their pregnancy. Seven of them were in slim women, four of whom were distinctly of the long, narrow thorax and abdomen type, in whom visceroptosis is so common. Still none developed any digestive trouble whatsoever. All but one nursed her infant. In only two of the cases could I feel sure that the lower as well as the upper curvature of the stomach

FIG. 6. — Private case that showed the highest gain in weight. A. W., 27 years old. Primipara. Delivered November 17, 1906. Child weighed 10¼ pounds. In active labor twenty-one hours. Troubled with nervous indigestion before her pregnancy, not since. Weighed March 2, 1906, 129 pounds; three months after delivery weighed 160 pounds. Perfect result. Nursed her child and claims she never before felt so well.

showed any definite descent, and in these, after repeated examinations with test meals, the Leube as well as the Ewald, they did not show any abnormal retention of food in their stomachs. The average line of configuration of the abdomens in my cases, as well as the tonic condition of the musculature of the walls and the general condition of these women, compared strikingly with the clinic cases that I saw. I don't doubt that with successive pregnancies these abdomens may not remain in as good condition as they are to-day. But at this time I feel that their efforts have not been in vain, since all of them claim to be perfectly well and better physically than they had been before their pregnancy, and I believe that the benefits were the logical results of these prophylactic measures against ptosis, which they had carried out during their first months after delivery.

A SUMMARY OF CERTAIN FORMS OF SURGICAL PRACTICE (FROM THE SAMARITAN HOSPITAL SERVICE).[1]

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Instead of a formal paper upon a single subject in surgery, it is purposed to present in brief résumé a number of matters that have proved of especial interest in the surgical service of the Samaritan Hospital. The communication will, therefore, be in the nature of a report of certain forms of surgical practice: either indicating our present attitude toward the further application of principles previously more or less well understood, reiterating methods which apparently have not received sufficient acceptance or appreciation by the profession, or describing novelties in surgery, operative measures that have been evolved in the routine of hospital work. In any case the limited time at our disposal precludes anything but a brief summary of any special subject, but it is trusted that points which through haste are not clearly explained may be rendered plain during the discussion.

General Surgical Anesthesia.—Ethyl chloride has not been generally adopted either for short operations or as a preliminary to ether narcosis; our slight experience corroborating that of others, that this anesthetic is as dangerous as, if not more dangerous than, chloroform. The nitrous-oxide-ether sequence is preferable and has much to commend it from its relative safety.

Of the general anesthetics exceptional attention has been paid to scopolamine-morphine. At first a clinical study of various narcotics and delirifacient alkaloids was made, these alkaloids being used for a month almost to the complete exclusion of ether and chloroform for operations upon nearly every part of the body, in persons of various ages and temperaments. In this way we soon obtained some working knowledge as to the sphere of action of drugs used for narcotic anesthesia. The most useful alkaloids were found to be scopolamine, hyoscine, and possibly daturine, used in combination with morphine and apomorphine. Discrepancies in the results obtained we at first attributed to variations in the activities in the alkaloids employed; but a more extended experience showed us that age, condition, and personal idiosyncrasy were the most potent factors in influencing the results. In general, slightly less than one-third of our patients were found sufficiently susceptible to scopolamine-morphine narcosis to enable the operation to be

[1]Read at "Samaritan Hospital Night," Northwest Branch, Philadelphia County Medical Society, March 7, 1907.

satisfactorily done without recourse to other anesthetic. Having had the method under trial almost continually since 1905 we are now able, by selecting our cases, to employ narcotic anesthesia with sureness and satisfaction, as experience has taught us the types of patients in which this anesthetic is not appropriate. Our conclusions are:

1. That narcotic anesthesia is usually unsatisfactory in robust persons under thirty.

2. In neurotic or hysterical young women unconsciousness is often difficult to produce and anesthesia is unsatisfactory.

3. In abdominal operations, except in patients with greatly relaxed or distended abdominal walls, scopolamine is objectionable as it produces spasm of the recti muscles.

4. Narcotic anesthesia is least suited to operations upon the extremities, the fingers and toes seeming to be among the last parts of the body to become insensitive. It is likewise not well suited to operations about the perineum and anus.

We select our cases for narcotic anesthesia from:

First, persons of middle or advanced age. Persons over fifty are almost uniformly susceptible to narcotic anesthesia.

Second, patients with chronic debility and asthenia; even young hysterical persons if suffering from forms of chronic debility may be very susceptible to scopolamine-morphine.

Third, patients with deficient eliminative functions, with toxemia, or with a tendency to uremia or cholemia, or those with degenerative disease of the central nervous system. These patients may be particularly sensitive, and in them the dangers of narcotic as contrasted with the dangers from other forms of anesthesia must carefully be weighed. If scopolamine be used the dosage should be smaller than usual and the induction of the narcosis very carefully supervised. Although we have had no deaths that could be attributed to scopolamine-morphine alone, twice have we seen the respiratory rate fall in such patients to three or four per minute, from which, however, the patients emerged without mishap.

Fourth, site of operation. Narcotic anesthesia shows its predominant analgesia upon the scalp, skull, face, and upper respiratory passages and neck, which fortunately are the very parts of the body in which inhalation anesthesia is most objectionable. In operations upon the mouth, nose, or upper pharynx it has a further advantage, that the reflexes are usually preserved, and thus the mouth is not only dry and free from mucus, but blood or other fluids gravitating into the pharynx are promptly swallowed instead of being aspirated into the larynx. In operations upon the larynx or trachea, such as laryngotomy or laryngectomy, the reflexes become objectionable from the constant cough produced by the manipulation, and in these cases the reflexes should be abolished by local cocainization of the mucosa. We firmly believe that narcotic anesthesia by reducing the tendency to aspiration pneumonia offers a means of reducing the high mortality-rate of such operations as laryngectomy. For the removal of malignant tumors of the face, mouth, jaws, neck, thorax, and brain, and for the radical mastoid operation, especially in middle-aged or elderly people, narcotic anesthesia is usually to be preferred to ether or chloroform. In persons debilitated or suffering from pulmonary disease or having other contraindications to ether the method may also be used with advantage for operations upon the intestinal, biliary, or renal tract, or upon the pelvic organs. For abdominal operations, in this class it becomes especially satisfactory if the abdominal walls are relaxed or greatly distended, as by a large tumor. During acute alcoholic mania patients often receive injuries requiring surgical treatment. Over ten years ago we observed that these patients became quieted and nearly insensitive to pain after a single

full dose of apomorphine. *This method must not be used in asthenic alcoholic mania.*

In a number of particulars the method of administration differs from that usually advised.

Technique.—The patient is prepared as for an ordinary anesthetization by means of baths, laxatives, and enemas. Seventy-five minutes before the time of operation the patient receives, by hypodermic injection, scopolamine hydrobromide 1/100 grain and morphine sulphate 1/6 grain. From this the patient usually becomes somewhat sleepy, but remains conscious. An enema is now slowly run into the bowel by gravity, consisting of compound spirits of ether ½ ounce, whisky ½ ounce, and warm water to make 4 ounces. Fifteen minutes later the hypodermic is repeated. Following this the patient's drowsiness increases and some reduction in sensibility may be noticed, but the patient often remains conscious. Twenty minutes after the second, guided by the pulse, pupils, respiration, and cutaneous sensibility, a third hypodermic containing apomorphine hydrochlorate 1/30 to 1/10 grain, and scopolamine hydrobromide 1/100 grain, and, at times, morphine sulphate 1/6 grain, is given. This is not, as a rule, followed by vomiting. Should the patient prove refractory to hypodermic number three and anesthesia not be produced, hypodermic number four may be given after an interval of at least fifteen minutes. This consists of morphine hydrochlorate 1/6 grain, apomorphine hydrochlorate 1/20 grain, scopolamine hydrobromide 1/100 grain. The dose of apomorphine is to be regulated by the condition of the patient, and is to be used sparingly or avoided in the asthenic.

Modifications.—In persons habituated to narcotics, the dose of morphine and apomorphine may have to be cautiously increased or repeated. Not more than 1/10 grain apomorphine should be administered at a dose, nor more than 1/15 grain in the weak or debilitated. In operations about the bowel, in lieu of the enema the following draught is given: spiritus ætheris compositus 3 drachms, spiritus frumenti 3 drachms, and water 2 ounces. Scopolamine-morphine anesthesia should be given with a supervision, intelligence, and care equal to that demanded in ether anesthesia. For excessive narcotism, which should be rare, the patient is catheterized and given an enema of black coffee 1 pint, aromatic spirits of ammonia 2 drachms, tincture of capsicum ½ drachm, and hypodermics of caffeine and strychnine are administered.

It is interesting that while our resident physicians view with equanimity the profound drug narcoses of the surgical wards, they spend hours industriously walking, flagellating, and stimulating the much milder cases of opiate poisoning admitted to the receiving ward.

Spinal Anesthesia.—For the past eighteen months we have employed spinal anesthesia in most of the cases of operation upon parts of the body below the level of the anterior superior spines of the ilium, and our experience embraces between 150 and 200 cases in which stovaine, alypin, eucaine-lactate, or tropacocaine alone or in combination with some adrenal product has been employed. From this experience we believe that spinal anesthesia enables the operator, in selected cases, to reduce the morbidity or mortality of operations. Clinically there seems to be no great difference in the relative toxicity of stovaine, alypin, eucaine-lactate, or tropacocaine. When a dosage exceeding 6 centigrammes of any of these drugs is used for rachi-analgesia, vomiting, circulatory depression, and transient syncope are frequently observed. Tropacocaine produces an analgesia that often involves the lower thorax, while that produced by stovaine or alypin rarely extends above the anterior superior spine of the ilium. There is an apparent wide variability in various samples of stovaine that we have employed. Some are followed almost invariably by

severe and protracted headache, while from other preparations the secondary headache is milder and often absent. We finally abandoned all solutions of stovaine except that prepared by Billon. Cocaine should never be used as a spinal analgesic. Eucaine-lactate, while preferable to cocaine, is decidedly inferior to other spinal anesthetics. Of the synthetic alkaloids, alypin is evidently preferable to the weaker novocaine and closely resembles stovaine in action. It has given better results than the worst solutions of stovaine, but more untoward effects than the best solutions of stovaine we have employed. Tropacocaine is the chief one of these drugs that can be advised for abdominal operations, and in general is the most useful spinal anesthetic that we have tried. Yet for operations upon the legs, perineum, and rectum we have used certain preparations of stovaine with excellent results. We have had no cases of infection of the meninges following spinal anesthesia, although we have repeatedly made the injection in the presence of severe forms of sepsis. One of our patients died shortly after the injection of alypin, but this man was nearly moribund and was doomed irrespective of the anesthesia. The method has been successfully used in patients from three to seventy years of age. In four or five per cent of the cases there is failure to produce sufficient anesthesia from error in technique or other cause.

Appendicitis.—Despite the voluminous writings and lectures upon the subject, there are certain important points that apparently have not received the attention they deserve. One of these has been emphasized by Murphy, and is the importance of the chronology of symptoms in the disease. Our experience has corroborated the great usefulness of this factor in the differential diagnosis. An attack of appendicitis begins with (1) diffuse abdominal cramp or colic, which is followed by (2) nausea and frequently vomiting, and this in turn is succeeded by (3) localization of the pain with tenderness, and if there be peritoneal involvement, by rigidity over the right iliac fossa; and (4) by temperature elevation, which, however, may not be marked. If the history shows that the symptoms have unfolded in this order, one may unhesitatingly make a diagnosis of appendicitis, and usually will be justified in advocating immediate operative intervention. If, however, the tenderness has preceded the general abdominal colic, pelvic disease, especially tubal or ovarian, is to be considered, and here the suggestion of Morris seems at times of value, that a single distinctly localized point of tenderness to the right of the umbilicus suggests appendicitis, while if two tender points be present, one an inch to the right, the other an inch to the left of the umbilicus, then the symptoms are probably due to disease of the uterine appendages. If the history indicates that fever, even though mild, has preceded the other symptoms, no matter how characteristic these may be, typhoid is to be considered; or pneumonia with peritoneal symptoms. In renal colic the initial diffuse abdominal colic is absent.

We consider, therefore, the chronology of symptoms to be frequently of the utmost value in the avoidance of error in diagnosing appendicitis and in determining the necessity of surgical intervention. A second point concerns the treatment of appendicitis, and is to emphasize the importance of avoiding intestinal traumatism or exposure in the more desperate cases in which there is marked peritoneal infection. The abdominal incision we have employed for four years is rarely longer in the complicated than in the uncomplicated cases. Except in the very obese, a transverse incision about one and one-half or two inches in length with a splitting of the aponeurosis and muscle entirely suffices for all operative work. If the appendix be behind the cecum, between the folds of the mesoappendix or mesocolon, the head of the colon is merely exposed, the base of the appendix doubly clamped, divided, cauterized, and then the appendix

bluntly stripped out from under its peritoneal investment by dry dissection carried close to the muscular coat of the organ. If there be much inflammation, the vessels close to the appendix are usually thrombosed, there is little or no hemorrhage from such subperitoneal enucleation, and ligatures may often be omitted. If there be a wide-spread peritonitis, then the greater reason that the vitality of this damaged serosa be not further reduced by exposure or by handling. The excess of fluid is removed through the small incision by gently sponging with dry gauze, a drain introduced down to but not between the intestines, and the patient quickly returned to bed, placed in Fowler's position, given frequent enemas, but no liquids by mouth, until the escape of flatus shows the subsidence of inflammatory ileus.

In the desperate cases with purulent peritonitis, in which the bowel is partially gangrenous, and ruptures during the manipulation, no attempt is made to suture the partially necrotic tissues, but gauze packing is rapidly introduced against the damaged bowel, and the patient, constantly maintained in the semiupright position, is hurried to bed as rapidly as possible. In these very serious cases the operation should not consume over ten or fifteen minutes. Disinfection, inversion, or elaborate suture of the stump are useless and even dangerous, because they consume time and involve unnecessary manipulation. The base of the appendix is merely tied and cut off and left close to the wound against the gauze drainage. We repeatedly have seen small fecal fistulas follow such operations, but they have invariably closed spontaneously within a few weeks. We have never seen hernia follow a drainage operation for appendicitis in which the incision was small, and the fibers of the external oblique split and not divided. In this type of operation spinal anesthesia is preferred, and the patient is kept quiet during the first twenty-four hours after the operation by means of opiates.

Surgery of Nerves.—Bearing upon the moot point in nerve surgery as to whether nerves ever primarily regenerate or not is the case of a young man for whom we resected one-half inch of the ulnar nerve after it had, in part, been paralyzed by a stab wound, and observed well-marked restoration of power and sensation in the nerve distribution within three days after the operation.

An early partial restoration of function in cases of neuritis has also been observed after splitting the sheath of the affected nerve and carefully disassociating the nerve fibers. We have now operated in three cases in which marked and almost immediate improvement followed such an operation. Several years ago we found that the sciatic nerve could be so split as to practically separate it into the bundles supplying the anterior and the posterior part of the leg. In a case of old sciatic palsy following dislocation, after splitting off the bundles supplying the anterior and more paralyzed portion of the leg, the nerve segment was carried through the thigh between the bone and adductor muscles, and anastomosed with branches of the anterior crural nerve. In this case, although the restoration of function was limited, the accuracy of the nerve separation was indicated by the fact that there was practically no increase in the paralysis of the posterior leg muscles as a result of the operation. More interesting was the recent attempt that has been made at the hospital to carry split-off segments of healthy nerve fibers across the body to supply paralyzed corresponding nerves. In a case recently reported of nearly complete brachial palsy from anterior poliomyelitis, segments of the healthy left brachial plexus were carried across the neck under the anterior muscles and anastomosed to split-off segments of the paralyzed right brachial plexus. Three months later the shoulder drop had disappeared, the child could move the shoulder and rotate the arm at will, and had gained power of flexing the fingers and of grasping objects

In the treatment of tic-douloureux a fuller experience has in no way lessened our confidence in the injection of a two-per-cent solution of osmic acid directly into the exposed nerve trunk. In no case have we failed to obtain some relief, although in a proportion of the cases it has been necessary to repeat the injection in other affected branches of the trigeminus, or occasionally in the same branch, apparently because all of the involved fibers were not destroyed by the acid.

Varicose Veins and Varicose Ulcers of the Leg.—These very prevalent and distressing conditions have been carefully studied from the view-point of their operative treatment with the assistance of Dr. W. A. Steel, and an operation which we have perfected for extirpating veins has been given considerable clinical trial. The operation consists in exposing the vein a short distance below the saphenous opening through a one-inch incision, and then introducing into the vein from above downward a long, bulbous, double-ended probe, to the shaft of which the distal end of the divided vein is firmly tied. The lower bulbous end of the instrument is then exposed through a half-inch incision, grasped, and by traction pulled out, the upper bulbous end pushing ahead of it the trunk of the internal saphenous vein. We have been able in this way to remove from 22 to 24 inches of vein by a single maneuver. Occasionally brittleness of the vein or defects in the technique render a larger number of incisions needful. Taken altogether, the method seems superior to the operation of Trendelenburg, of Mayo, or the many other methods of extirpating this great venous trunk. Dr. Steel, who has carefully studied the after-course of these patients, finds that if there is not a widespread, fine dilatation of the capillaries, or edema, and if the internal saphenous is the chief trunk involved, this operation is followed by prompt healing of the ulcer and a satisfactory cure. If, however, the skin of the leg shows a network of capillaries and dilated veins, then while the operation gives benefit there is often a tendency for the ulcer to heal only partially, or if healed, to break down again. In such cases, therefore, the interrupted Schede incision, as suggested by Powell, is added to the operation of extirpating the chief vein trunks. The combination of these two operations has proved almost uniformly curative, while the Schede or the Powell operation alone is at times followed by relapse.

Bone and Periosteal Transplantation.—Regeneration of bone occurs chiefly from the periosteum. In the healing of fractures the amount of bone formed by the endosteum or from the osseous tissue itself is inconspicuous as compared with that formed by the outer covering of the bone. This well-known physiological fact has suggested the use of periosteal flaps or of transplantation of portions of periosteum to bridge defects in the shafts of long bones. We have employed for this purpose ivory pegs inserted into the ends of the fragments to immobilize the bone, and have bridged the gap by turning down flaps of periosteum and also by using grafts of periosteum transplanted from one of the ribs. In one case after a crushing injury of the hand, with a total loss of the second and third metacarpal bones, the soft parts were replaced by pedicled flaps from the abdominal wall and the bones by sections of rib with attached periosteum, that previously had been carefully excised by means of circular power saw. In this case the skiagraph shows the retention of the transplanted bone.

Conservative Treatment of Advanced and Recurrent Cases of Sarcoma.—Differing from other malignant tumors, sarcomas are usually fairly well encapsulated. This encapsulation becomes more marked after *x*-ray treatment. The Roentgen rays have a marked destructive action upon the sarcoma cells, yet if the tumor be very large this action is often not sufficient to arrest the disease. Moreover, the degenerative tendency present in all massive malignant neoplasms is enhanced by the rays and

the patient's life falls in jeopardy, it may be, not from the growth of the sarcoma cells, but from their death and the absorption of toxic products from the sloughing mass. These patients neither bear severe mutilating operations well nor are they assured against recurrence by even the most extensive operation that has yet been hazarded by the surgeon. The *x*-ray treatment alone is insufficient, and surgical intervention alone is likewise insufficient, yet we are impressed by the thought that the combination of the two methods offers the best chance to the patient. Certain conditions are absolutely required, however, in order to obtain the best results. First, the *x*-ray treatment must be given by an expert over a very prolonged period of time. It may be that daily treatments with a carefully regulated dosage will be necessary for three or four months before any results are perceptible. Thus there is required first of all not a little faith and persistence on the part of the patient. The second point is the necessity for surgical *enucleation* of all masses as soon as they become a peril to the patient from necrosis or from mechanical pressure. The operation should be of the simplest character, local anesthesia being often all that is required. The overlying tissue and capsule of the tumor are incised, and with the finger or blunt separator the contents of the sac are rapidly enucleated, the sac wiped clean and dry and painted with a strong alcoholic solution of methylene blue. After the operation the *x*-ray treatment is at once resumed. If other tumor masses develop under the treatment these are likewise subjected to subcapsular enucleation. In three patients with recurrent sarcomas in whom treatment along these lines has been carried out for a period of from six months to a year and a half, the cachexia has disappeared, the patients have gained in weight, and, undoubtedly, at least a prolongation of life and a great increase in physical comfort have been obtained. In one of the cases there was a large sarcoma of the testicle, with later involvement of the deep pelvic glands; in a second, an enormous sarcoma of the shoulder and chest wall; the third, a recurrent sarcoma of the forearm. Cases that were nearly contemporary as to time, and that have had amputation or other mutilating operation, or other forms of treatment, have all died. It is believed, therefore, that the conservative treatment here outlined deserves a wider trial.

The Non-operative Treatment of Serious Injuries of the Forearm and Hand.—A few years since there was an understanding in the service of the Samaritan Hospital that all amputations below the wrist were to be placed in charge of the resident physician, and as a result there soon arose quite a competition between members of the resident staff as to who should have, during the service, the largest number of such amputations. We were amazed to find that amputations of the fingers constituted one of the most common of operations in the dispensary service, and at times several fingers were amputated in a single week. A rule was therefore enforced that no general anesthetic should be given, and that no amputation be done except under the direction of the attending surgeon or his qualified assistant. Although the dispensary service was progressively increased as to the number of cases attended, amputation of the fingers or hand has become very infrequent. After any severe accident to the hand an effort is made to retain all of the attached tissue that the patient brings to the hospital. After severe *crushing* injuries not only are sutures interdicted, but if the skin be not already freely opened as a result of the injury free incisions may be made to prevent compression of the vascular channels by the secondary swelling. The parts are then carefully arranged in position upon a splint in a loose gauze dressing, and if severe secondary inflammation is feared, continuous irrigation is used until the acute inflammatory reaction has subsided. As soon as healthy granulations are well started,

large denuded areas are covered by Thiersch grafts, or, especially if there be denuded living bones, by large pedicled flaps taken from the abdomen. After nine days the patient is again anesthetized and the flap cut free from the abdomen and arranged in position. In this way hands that have been ground between cog-wheels, crushed between bumpers or under car wheels, that ordinarily would have been amputated, have been partially or completely preserved. Even portions of phalanges found to be living within a gangrenous finger have been preserved with good functional and cosmetic result. This method is much more troublesome to the patient and the surgeon than simple amputation, yet so much is gained as to later usefulness that no patient has regretted the increased suffering, or requested that the tissue saved be later removed. There has been no mortality from this conservative treatment as applied to the hand and arm; although for the leg and foot it is admitted that such conservative treatment has less to commend it, and at times is fraught with increased danger to life.

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THE PRINCIPLES UNDERLYING THE TREATMENT OF TUBERCULOSIS.[1]

BY F. M. POTTENGER, A.M., M.D., MONROVIA, CALIFORNIA.

Since the time when the scientific world began to recognize tuberculosis as being a curable disease, the treatment of it has undergone many changes. The tendency of these changes has been to make the methods of treatment more rational and the measures more scientific.

The medical profession but imperfectly appreciates the degree to which tuberculosis is curable. Perhaps the majority of physicians still hold to the opinion that it is an incurable disease, and while hearing of results that have been obtained, they either look askance upon the diagnosis or question the reliability of the reports. The hope of the world seems to be still centered on the future, when it is expected that some magic remedy will be discovered which will be a sure cure for this disease. Men with this attitude cannot appreciate the measures which we now have at hand. If they would but grasp the nature of tuberculosis, and then study the measures which we have to-day to combat it, they would see by a careful study of the principles which underly the cure of this disease that by waiting and looking to the future we are losing valuable time, and uselessly sacrificing lives. If laymen were taught to recognize the early signs which carry suspicion of tuberculosis, and members of the medical profession were capable of examining chests with sufficient intelligence and thoroughness to recognize the early changes in physical signs which are due to tuberculous infiltrations, and both were sufficiently imbued with the curability of the disease and the necessity of prompt, energetic treatment, we could say the cure of tuberculosis is now at hand.

The most detrimental factor against the curability of tuberculosis is delay. It is not tuberculosis but neglected tuberculosis that kills. Statistics show early tuberculosis to yield readily to rational treatment, but neglected tuberculosis to be almost invariably fatal. The first principle then in the treatment of tuberculosis is early diagnosis. Without this our efforts at treatment must be greatly increased and our favorable results must be largely diminished. It is not sufficient to make a diagnosis of tuberculosis. Something must be done. The patient must have sufficient change brought about in his resisting force to successfully combat the infection, or he will succumb. When an early diagnosis has been made, the next step is to institute treatment without delay.

The necessity for this can hardly be ap-

[1] Read before the American Therapeutic Society, Washington, D. C., May 4 to 7, 1907.

preciated by the patient, for as a rule the victim of early tuberculosis does not feel ill; but it must be appreciated by the physician, and he must use his persuasive powers in impressing the patient with the necessity of immediate treatment. Delay is always dangerous.

Tuberculosis is a progressive disease. It seems to me that we have sufficient evidence at hand now to conclude that tuberculosis is primarily a disease of the lymphatic system. The germs gain entrance into the system through the mucous membranes, are carried to the lymph nodes and strained out by them. This being the place *par excellence* where the blood serum comes in most constant play upon whatever intruders find their way into the system of the host, most of the bacilli are destroyed and cause no further trouble. At times, however, the bacilli, in spite of the conditions unfavorable to their growth, succeed in establishing themselves in these glands; they multiply and cause a focus of infection. While we are not yet prepared to say that tuberculosis of other organs, such as the lungs, intestines, bones, joints, meninges, and larynx, is always an infection carried directly from the lymphatic glands, for we must recognize the possibility of the disease extending from one organ to another, yet scientific observations point to the glandular involvement as being the primary focus in the body.

We have not yet become bold enough to advocate the treatment of tuberculosis of the lymphatic system unless the glands show signs of suppuration, but the time will doubtless soon come when we will treat early infections of the glandular system with as much justification as we are now treating early extensions to other organs. When other organs become involved immediate treatment must be instituted in order to prevent the disease from spreading and to sufficiently reënforce the resisting power of the patient to aid him in overcoming the infection.

Not only should treatment be instituted at once, but this treatment should be a rational one. The adoption of the wrong treatment at this favorable time may be the cause of the death of the patient. It seems to me that we can spend a few moments very profitably in discussing the principles which underlie the treatment of tuberculosis. We shall endeavor to indicate the results which are to be aimed at in treatment, and then to show in what manner the various measures which are recognized as of value meet these indications.

Tuberculosis is a disease which is caused by a specific microörganism, and like all similar diseases its cure consists in establishing on the part of the host an immunity to the specific microörganism and its toxins. No matter what form of treatment is instituted it must work either directly or indirectly toward that end if it is to be of any value. If a cure results, immunity has been established.

The term immunity as here employed is not immunity in that narrow sense in which it is so generally used, designating a condition in which an individual sometimes exists wherein it is impossible for him to become infected with a certain specific microörganism, but in that broader sense in which it is used in modern medicine to designate a certain resisting power which is developed in an infected organism against the specific microbe or the toxins of this microbe which produces disease. Immunity in this sense is of all degrees: it may be partial, it may be complete, it may be transitory, or it may be permanent.

Many times we see a partial immunity develop. The patient improves for a time and it seems that he will recover, but for some reason the disease assumes an increased virulence and the host is overcome. In most bacterial diseases we note these periods of improvement and exacerbation. In tuberculosis this is especially noticeable. Sometimes immunity is established, resulting in a cure; but the immunity is only transitory, and in a short time the patient may become infected again. Pneumonia is a good example of

this. On the other hand, a cure from certain other diseases, such as smallpox, usually results in an immunity which lasts a lifetime.

In the treatment of tuberculosis, then, we are not attempting, much as it is desired, to bring about a state whereby an individual who is suffering from the disease will be incapable of ever becoming infected again, but we are endeavoring to so strengthen his resisting forces that he will be able to overcome the tubercle bacilli and their toxins, and become cured of his disease. We are endeavoring to establish, as far as he is concerned, an immunity to the infecting bacilli and their toxins.

While there are many elements which enter into the production of immunity which we cannot discuss at this time, yet there are certain broad underlying principles which we ean discuss to advantage.

By studying the phenomena which occur when an infection is taking place, we may learn nature's method of curing infectious diseases. The production of immunity is a chemical process and is due to a reaction upon the part of the cells of the invaded organism in response to stimulation caused by some foreign element. In tuberculosis this necessary stimulation is caused by tubercle bacilli and their toxins.

When specific microörganisms gain entrance to the body tissues a struggle for mastery at once ensues. The blood is naturally endowed with defensive bodies, and when an inoculation occurs these at once attack the invaders, some of which are destroyed. This destruction of bacteria sets free toxins which further stimulate the body cells to the production of more antibodies which at once are applied to the destruction of the bacteria. In many instances this stimulation sets the machinery of immunization into action, so that the blood is flooded with more antibodies than are found in it under normal conditions. The bacteria, on the other hand, are not idle; they are multiplying, and at the same time suiting their environment to their own defense. Their presence causes an irritation with stagnation of the lymph and blood current, and thus the antibodies are not applied directly to the microörganisms. In the case of some of the bacteria, such as the tubercle bacillus, there is a further defense thrown about the microörganisms in the form of the wall of the tubercle. While the tubercle may be primarily a means of defense for the invaded organism against further inroads of the bacilli, in the end it works against the host because the bacteria shut up in the tubercles are shielded from the free access of the body fluids with their protective bodies.

Whether the bacteria or the invaded organism shall conquer in this struggle depends, first, upon the number and virulence of the bacilli, and secondly, upon the manner in which the body cells respond to the formation of antibodies. The antibodies which are produced at such a time are of several different kinds. Antitoxins, lysins, agglutinins, coagulins, precipitins, and opsonins have been studied so far, and it is probable that there are still others which are as yet undiscovered.

It is very important to know that these specific antibodies can be produced not only by the inoculation of living virulent bacteria, but by bacteria which have been killed. The only essential is that the chemical element in the bacteria which calls forth the elaboration of the antibodies remains intact. Experiments carried out with dead staphylococci, typhoid bacilli, vibrio of cholera, and products made from tubercle bacilli show that they stimulate the organism to the formation of the very same immunizing elements as are produced by the living microörganisms. Thus we may by vaccination with dead bacteria or bacterial products set the physiological machinery of immunization into activity and immunize our patient.

Another fundamental principle in immunity is that the antibodies resulting from an infection or from a vaccination are specific for the microörganism which sets the machinery of immunization in motion

and causes their elaboration. Thus typhoid bacilli cause typhoid antibodies; staphylococci, staphylococcus antibodies; and tubercle bacilli or tubercle vaccine cause antibodies for the tubercle bacillus.

While I do not know whether any experiments have yet been made to determine by actual measurement the relative resisting power of individuals in normal health and those with lowered vitality, yet it stands to reason that a man in normal health should be less prone to infection than when in ill health. It also seems but common sense that a man whose nutrition is good should offer more resistance to a disease than one whose nutrition is poor.

With this brief discussion of nature's method of curing infectious diseases, we can now intelligently approach the subject of the treatment of tuberculosis. We can understand nature's method and we can estimate the part played by each of the various measures which we employ.

We can see that the ultimate aim of scientific therapy in tuberculosis is the establishment of immunity, whether it be indirectly, by improving the general condition of the patient and making him more resistant, as is done by placing him in the open air, furnishing him with nutritious food, and training him in the proper way of living, or directly, by artificially increasing the antibodies of the blood by the inoculation of tubercle vaccines. We cannot understand the cure of tuberculosis in any other light than this. If a cure results, it is because the organism is either naturally supplied with sufficient antibodies, or, stimulated by the toxin of the tubercle bacillus, has arisen in its own defense and produced sufficient antibodies to overcome the infection.

We would classify the various measures employed in combating tuberculosis under six heads:

1. Those which aid in bringing about immunity by endeavoring to restore the natural resisting power of the patient to a point as nearly normal as is consistent with the condition present. Among such measures we must class fresh air, hygienic measures, proper diet, hydrotherapy, favorable climate, and suitable tonics.

2. Those which aid in bringing about immunity by artificially stimulating the body cells to the production of more specific protective substances. In this class falls vaccination, or treatment by the injection of the specific products of the bacillus, such as tuberculin, extracts of the tubercle bacillus, and bacillus emulsion.

3. Those which aid in establishing immunity by supplying to the organism specific protective substances which were produced by vaccinating some animal, such as the horse or cow. Under this head come the various antitoxic sera.

4. Those measures which cause an increased flow of blood or lymph to the seat of the infection, thus bringing a greater amount of the specific antibodies into contact with the bacilli and causing their destruction. Bier's hyperemia, Finsen light, poulticing, and the local congestive action of tuberculin are measures whose action is explained in this manner.

5. Remedies and measures which relieve symptoms.

6. Measures which relieve any secondary infection that may be present.

Thus it can be seen that there is nothing specific in such measures as fresh air, good food, the regulation of rest and exercise, hygiene, hydrotherapy, and tonics, yet they have their purpose in the treatment of tuberculosis. By these measures we sharpen the appetite, improve digestion and assimilation, strengthen the heart, improve the quality of the blood, tone up the nervous system—in a word, we bring the patient to a point where he is as nearly a normal man as is possible considering the pathological condition from which he is suffering.

How much this falls short as measured by the opsonic power of the blood has been determined by Lawson and Stewart (*Lancet*, Dec. 9, 1905) in twenty-four patients who were treated by ordinary open-air

methods in a sanatorium in Scotland. These patients had been treated for a period varying from one month to two years at the time of this investigation. If we take the normal healthy individual's opsonic index as 1, and compare the indices of these patients with it, we find that after this period of open-air sanatorium treatment the indices of twenty out of the twenty-four patients was below .8, the average being .75. This means that ordinary hygienic, dietetic, open-air treatment as carried out under the most favorable circumstances was able to bring the body fluids of these patients to a condition where they were able to prepare only three-fourths as many tubercle bacilli for destruction as the body fluids of a normal individual.

We can also see from the discussion which has preceded that the products made from the tubercle bacillus do have a specific action, and when injected artificially raise the content of protective bodies in the blood. This being true, we might hope by proper dosage of these products to greatly aid the organism in its attempt to overcome the infection.

That this is not theory only, but that it works out in practice, is proven by these same cases mentioned above. After six weeks' treatment by the inoculation of tuberculin the power of the body fluids of these patients to prepare tubercle bacilli for destruction by the phagocytes was raised from three-fourths of that of a normal individual to 1.19, or 19 per cent more than a normal individual. Thus by the injections of tuberculin the body fluids of these patients were able to prepare 58.6 per cent more bacilli for destruction than they were under open-air methods alone.

It is probable that an invaded organism in good nutrition is able to respond by the production of more specific antibodies than one which is debilitated. It can also be definitely shown that by the inoculation of specific vaccines the physiological machinery of immunization may be set in motion so that the body cells produce more defensive bodies than they will without such stimulation. But the treatment of tuberculosis is not so simple as this. We have more to do than to keep the nutrition high and raise the content of the antibodies in the blood. We must also bring the antibodies to bear on the bacilli, and when we recall the nature of the tubercle, its lack of vascularity, and the condition of stagnation of lymph and blood which ensues in and about a mass of tubercles, we can see that a very important part of treatment is to use some method by which an increased flow of blood may be directed to the part. The importance of this in joint tuberculosis has been established by Bier and his followers, and it now remains for the method to be applied to tuberculosis of the lungs.

In tuberculin we have an agent which causes a hyperemia and thus fulfils the double function of stimulating the cells to the formation of more antibodies and of bringing them to bear upon the bacilli in such a manner that they can be of greatest protective value.

Finsen's light, perhaps, owes much of its efficacy to the hyperemia that it produces, and in those cases in which it is of little avail in treatment Bulloch has shown that the content of the blood in specific antibodies is low.

It is probable that through the employment of light rays or some form of electricity we may some day arrive at a means of satisfactorily causing a hyperemia in the tuberculous areas in the lung, thus greatly assisting nature in her cure of the disease.

Another factor of great importance in the treatment of all cases of tuberculosis which are advanced beyond the incipient stage is mixed infection. There are present other complicating microörganisms which interfere with healing. It is probable that through further research by methods which have been given us by Wright we will be enabled to determine definitely the character of mixed infection and to apply the proper vaccine for its cure.

Thus we conclude that the first principle

of treatment in tuberculosis is early diagnosis. This should be followed promptly by energetic, rational treatment. The rational treatment consists, first, in making the patient as nearly a normal individual as is consistent with the condition present; secondly, in artificially stimulating the defensive powers; thirdly, in bringing these antibodies to play on the bacilli as directly as is possible; and fourthly, in relieving any associated mixed infection that may be present.

REMARKS UPON THE THERAPEUTIC ACTION OF CONVALLARIA.

BY WILLIAM LENNEKER, M.D., CHICAGO, ILL.

My experience with the fluid extract convallaria (lily-of-the-valley) has been very extensive and very successful. For the last five years I have been giving it to my patients in all kinds of heart affections, with the exception of fatty degeneration of the heart. In that pathologic condition convallaria cannot be used and becomes detrimental. Digitalis is perhaps the best known, and is a fairly reliable heart tonic, but it has some disagreeable by-effects and after-effects, which become sometimes very troublesome to the practitioner. First of all, digitalis will, after a person has taken several large doses, suddenly exert its action, and then instead of helping the patient, make him ill. Again, it will when given in large doses upset the stomach, take away the appetite, and cause vomiting. In cases of heart failure caused by injuries, where the patient is also vomiting, digitalis cannot be used, or can only be used with very little effect.

But this is not the case with convallaria, which in itself is one of the best tonics for the stomach we have. It gives tone to the stomach, increases the appetite, and what is more, it exerts a tonic effect upon the intestinal mucosa, increasing the action of the bowels in a great many people.

Shoemaker (Materia Medica and Therapeutics) says: "In small doses this drug (convallaria) strengthens the heart's action. In larger quantities it restrains excessive cardiac activity. It has been found of service in mitral insufficiency. It quickly relieves the dyspnea and palpitation, and after having been given for two or three days may be discontinued for a week or more without recurrence of symptoms. Convallaria seldom disagrees with the stomach, and no cumulative action has been observed. As a rule, the appetite and digestion seem to improve under its use, and regular action of the bowels is promoted."

Ellingwood, in his Materia Medica, speaks very highly of it, and says: "It strengthens the heart's action, slows the rapid and feeble pulse, corrects the rhythm, improves the tone and increases the power of the heart, as evidenced by the increased tonicity throughout the entire capillary circulation. Its influence is exerted in a regular, steady, and permanent manner. It is also efficient in the dropsy of Bright's disease. It is useful in the enfeebled heart of phthisis pulmonalis. In rheumatic endocarditis and pericarditis it serves a double purpose: it strengthens and improves the tone of the heart, and favors the elimination of morbid products which cause inflammation. But few remedies will act more efficiently. To sum up the influence of convallaria, it is used to excellent advantage in the tobacco heart, in the asthmatic breathing from enfeebled heart, and especially in chronic asthma.

"Germain-Sée mentioned its use in the following pathological conditions: He highly recommends it in simple cardiac arrhythmia; in palpitation resulting from a state of exhaustion of the pneumogastric

nerve, the most frequent source of palpitation. In mitral constriction, especially when it is accompanied by failure of compensation on the part of the left auricle and the right ventricle, the cardiac force augments visibly under convallaria, as the sphygmograph testifies. In mitral insufficiency where there are pulmonary congestions, in dilatation of the heart, without fatty degeneration, convallaria is indicated. In all cardiac affections, indifferently, from the moment that cardiac inflammations appear, convallaria has an action, efficient, prompt, and certain."

My own cases have been of the following type:

CASE I.—I was called to see a young woman who had been operated on for appendicitis. The woman had recovered from the operation, but being pregnant before the operation she was now, two weeks later, threatened with miscarriage. She was in a highly nervous state, and had severe headache, excessive vomiting, and acute pains in the abdomen. She had been given before I came several doses of morphine by mouth and rectum, without any effect. I found the most dangerous feature to be her heart. The pulse was in such a condition that it could not be counted; it was at least 150 and irregular. She also complained of cardiac pain.

I took one-half ounce of fluid extract of convallaria and mixed it with three and one-half ounces of simple elixir. I instructed the nurse to give her this mixture in teaspoonful doses every half-hour, which would be eight drops of the convallaria. The woman retained the mixture, showing its sedative and tonic effect on the stomach, as it stopped the vomiting. When I returned two hours later she had taken thirty-two drops, and her pulse was already reduced so that I could count it. I now ordered the remedy to be given one teaspoonful every hour, and after six hours I had reduced her pulse to 120, full and soft. I now ordered the medicine to be given all night, two hours apart. When I returned the next morning the woman was much better and the pulse was 100, full and soft. From that time the patient made a good recovery.

CASE II.—The patient's heart was very irregular, with intermissions, becoming weak and getting stronger again. He said he could not sleep at night. Knowing the man to be in the tobacco business, I asked him how many cigars he smoked. He said that he did not smoke much, but that he tasted a great many tobacco leaves for rolling into cigars every day before purchasing the tobacco. I came to the conclusion that the man's trouble was due to excessive use of tobacco. He said, "If you want to give me digitalis, I have taken a bushel of it, and it does me not a bit of good." I told him I would not give him digitalis, but another medicine entirely different. I prescribed for him fluid extract convallaria 3 drachms, fluid extract nux vomica 1 drachm, and 3½ ounces of simple elixir. This was six drops of convallaria to a teaspoonful, and two drops of the nux vomica. I told him to take the medicine every two hours and report to me in two days. He came back after two days saying he felt considerably better, and that he had slept for the first time the night before. I felt his pulse, and although it was not altogether regular it was much improved. I directed him to take the medicine right along, every three hours, four doses a day. He took in all three bottles of this mixture of convallaria and nux vomica, and is a well man to-day.

Colbeck, in his work on Diseases of the Heart, says "the action of convallaria appears to be very uncertain, but the drug is sometimes of service, more especially when given in combination with strophanthus." Although I am not opposed to strophanthus, I have never seen strophanthus increase the good effects of convallaria. On the contrary, I have on several occasions tried to combine strophanthus with convallaria and found that the convallaria alone was better. I invariably use, and insist upon using, Parke, Davis & Company's tested fluid extract of convallaria.

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ONE YEAR'S EXPERIENCE IN THE HOME TREATMENT OF TUBERCULOSIS.[1]

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A general objection which may be entered to this paper at the outset, and one which bears force in its trend, is that no one has any right to base any conclusions on one year's experience in a disease such as pulmonary tuberculosis, whose element of chronicity is greater than in almost any other disease with which we are acquainted. I beg to meet this objection at once by stating very frankly that I have no remarkable cures to announce in favor of such treatment, nor any disastrously fatal results, which might be used as an objection to such a line of treatment. What I desire to do is to give a frank statement of work done during the year; of success achieved, of failures resulting; to analyze as carefully as may be the cases as they are recorded, and to seek to draw lessons for all of us from failures as well as from successes.

It is hardly necessary to reiterate what has been said over and over again, that probably 98 per cent of our cases of tuberculosis, both of the lungs and of other tissues, must be treated at home and treated by the family physician. The very small minority of about 2 per cent may on account of their social and financial standing, or on account of a happy combination of circumstances, find themselves able to change their place of abode, and desist from all work while seeking a cure. Of the 2 per cent approximately who can do this I have nothing to say. Their numbers in the first place are too insignificant to consider, and their opportunities for feeding, for alternating their places of abode consistently with climatic changes, and for keeping themselves constantly stimulated by change of environment, all tend to make them comparatively easy patients to treat, and, if they are at all amenable to discipline, to cure.

The most of our cases of tuberculosis occur, as is well known, among the middle and poorer classes. Most patients must support themselves, and likewise frequently support several of their immediate family, while they are undergoing treatment.

Let us say then as preliminary that about 98 per cent of all cases of tuberculosis of the lungs must be treated at home, and that of the 98 per cent about 80 to 90 per cent must support themselves as well as aid in supporting others.

Fortunately for us as physicians, and fortunately for our patients as such, it has been discovered by incontrovertible experience that many cases do better at home under the care of their own family physician, with the judicious, loving attention of kindly relatives, than away from home, either in a sanitarium with strange surroundings, or in an ideal climatic environment where conditions for obtaining necessary food and for securing necessary funds are notoriously bad.

A change of heart in this regard has come with remarkable rapidity during the last ten years. Ten years ago it was thought extremely inadvisable for any tubercular patient to remain in his home climate; while now the trend of belief is that, generally speaking, the patient does better to remain in his home environment providing his case is taken in charge early enough. The general feeling is, moreover, that a person cured in a remote region and in a high altitude, and with dry air, must constantly remain in those surroundings and under those conditions to maintain the cure. Life in such environment might not be at all unpleasant, were it possible for an ordinary artisan or workman to secure the opportunities for obtaining a

[1]Read before the Michigan State Medical Society at Saginaw, Mich., May 16, 1907.

livelihood there, but as is well known the favored region for tubercular patients is the region of aridity, such as the mountains of Arizona and New Mexico, or the sands of California and Florida. There a man has difficulty in living sometimes with wealth at his command, while one with nothing but the labor of his hands to maintain life in his body is sure to starve.

Let us state here likewise, also as a reiteration, that the treatment of pulmonary tuberculosis resolves itself into the treatment of general malnutrition. A poor climate with excellent food and cheerful surroundings is inexpressibly more to be desired for a tubercular patient than an ideal climate with poor food and cheerless surroundings. Let it likewise be stated here that it is not so much a matter of climate, or particular kind of air, or particular altitude in which that air is inspired, as it is *air* itself. In other words, if we can get our patients to live outdoors in the climate of Detroit or elsewhere in Michigan, and at the altitude of those points in which they reside, they are to all intents as well off as if they were living outdoors in the altitude of Tucson or Santa Fe, and with the ideal sunshine of that location. Of course, it is very much more comfortable for a person to live outdoors twenty-four hours out of twenty-four with a climate such as those I have mentioned in the southwest than for one to do the same thing in the climate of Michigan, where one day may see the thermometer at 90°, and a week after may find it shivering around 30°. Moreover, the rainfall is much greater in our own neighborhood than it is in the points west, and that would naturally of course drive people indoors. However, with suitable shelter, and with a little insistence, proper clothing, and the proper direction from the physician, fresh air can be obtained in abundant volumes, and will do practically as much good here in Michigan as in the arid regions of the southwest. If, moreover, there can be found anything more pathetic than the picture of a sick tubercular man away from home, away from friends, unable to participate in the several activities of his surroundings, becoming morbid, losing heart, losing strength, losing shortly life, in these unwholesome environments, then I have not seen this more pathetic picture.

Like every other physician I have been enamored with this climatic cure of tuberculosis, and realize to its fullest extent the exhilaration which comes from an increase in altitude, and the blood changes which are so beneficial from such altitude. It is hardly necessary to remind you of the recent discoveries in regard to the increase in the hemoglobin and in the corpuscular elements of the blood which come from high altitudes. I have been, however, forced like other physicians to the conclusion that for all practical purposes, as I have suggested before, the great bulk of our patients must be treated at home, and must be put in shape so that they can continue their ordinary avocations at home. And since we know that fresh air, sunshine, abundance of food, and rest are essential in the cure of tuberculosis, and since these can be obtained at home as well as, or better than, in a remote region, I have adopted the home treatment of tuberculosis as the ideal one in handling this disease generally. For certain well-selected cases I should still recommend a climatic change with a high or low altitude to suit the individual case, or I might in certain cases even recommend an ocean voyage, or a residence in a lumber camp among the pines, but these cases would be by far in the minority.

Could these truths be forced home to every physician in the land, and could every physician be taught that it was necessary that he should give these cases special, continuous, and always encouraging care, stimulating by every means in his power the *hope* for a cure and *belief* in a cure, which are I believe among the chief essentials for a cure: could, moreover, every physician in this land be induced to watch for these cases of tuberculosis, to be on guard for them, to seize them at precisely the psychological mo-

ment, *i.e.* the period when the lung has not become seriously invaded, but when the pretubercular manifestations are well marked: and could he with urgency obtain from his patients acquiescence in his demands for a scientific antitubercular treatment—then I believe that in a few years this disease, this dreaded white plague, will have become changed, and we, who view so sadly the possibilities of cure in cases coming under our observation late in the disease, would have our sorrow changed to joy in the reception of cases always in the early stages and thus always presenting possibilities for a permanent and complete cure.

And in this connection I may be permitted here again to emphasize that which I think is too sadly and too generally overlooked, that if we desire to cure tuberculosis it is absolutely necessary that the cure should proceed from the earliest stage of the disease. Taken early there is no disease more curable; taken late there is no disease more hopeless.

Let me emphasize this fact still again, because I feel that it is one not recognized by the very men who should recognize it, if we wish ever to stamp out this plague, viz., the great body of general family practitioners, who see these tubercular cases always from the first, and usually in their pretubercular stage, the stage when the patient is ailing and sickening and preparing the soil for the reception of the pathogenic germs.

With then the disease properly diagnosed, and with the physician in charge possessing a full understanding of the principles of modern scientific treatment, it is incumbent upon him that he take into his fullest confidence the patient who is suffering from incipient tuberculosis; that he lay before the patient the true inwardness of the situation; that he insist upon him clearly understanding that he is a victim of tuberculosis; that according to modern scientific belief this is a curable disease; that the cure rests largely with the patient himself; that his cure must proceed at home and under the care of his family physician; and that the treatment will extend itself not over days or weeks, but over months and years. Let him understand fully, moreover, that it is the belief of the physician that with proper coöperation on the part of the patient the possibilities for cure are excellent.

With a proper understanding of the situation, such as I have enunciated, it becomes an easy matter to treat the patient.

There is no hiding from view the diagnosis, no surreptitious whispering to the friends, no ominous shaking of the head, no equivocation which may excite the suspicion of the afflicted one, but a frank, free, honest understanding between physician and patient. With such an understanding I think all of us will agree that the situation is greatly simplified and the cure wonderfully hastened.

Let me now recite some cases that have been under my care during the past year. I have had under observation in all eight cases during that time. One of them has passed from under my care into the hands of another physician and is about to die. I saw her first about November last. She was a young married woman, and had a large area of tubercular consolidation at the base of the right lung posteriorly. She had been for some time under the care of one or two other physicians, but, as I gathered from the patient, she had received practically no treatment beyond a little cough medicine. The case had been contracted from her brother, whom I attended for a few weeks last July, and who died in August, 1906. She was not a good patient to treat, being unruly and flighty, and seemed to be wholly unable to comprehend the true inwardness of the situation. I was very emphatic in regard to certain things being done if she wished at all to be improved, and there coming a sharp disagreement between the patient and myself I retired from the case after a week or two of treatment. My successor in the case I fancy found things equally bad, and was able to do but little for her.

The remaining seven cases I will discuss seriatim.

CASE I.—A young lady aged twenty-five, a stenographer and bookkeeper by occupation, came under my care a year ago last March. Her brother had died of tuberculosis a few years before, but with that exception there was no family history of the disease. This brother believed he had contracted the disease from a fellow workman. She had always enjoyed good health until a few weeks before her first visit to my office. A persistent cough for three or four weeks brought her to see me. I could find no well-marked lesion in the lung, but an examination of the sputum showed tubercle bacilli. The patient showed a constant slight rise of temperature of about a degree in the evening. She had good digestion, but an exceedingly poor appetite, an appetite which seemed hard to "whip into line." Although she had had a cough for only about three weeks, she had been tired and languid and weary for about two or three months, but thought nothing of it. She was ordered to discontinue her work entirely until the temperature became normal, which result was accomplished within about two weeks. Through the kindness of her employer at that time she was permitted to get away to some friends in the country for a prolonged stay. There the appetite improved rapidly, and the patient commenced to put on flesh quickly under forced feeding. The treatment consisted in rest in the open air for practically the twenty-four hours out of twenty-four, except when weary of resting she was permitted to take very moderate exercise. As soon as weariness supervened she was ordered to rest again, and to regulate her exercise entirely by her desires. At night she slept indoors, but had half the window removed, so that the air circulated freely and constantly over her bed. She was warned to fear foul air rather than drafts, and proved in this regard as well as in all others an admirable patient. The diet consisted of an ordinary nutritious mixed one, with the addition of raw eggs in the form of an egg oyster, to the extent of from two to six or eight a day (depending on her ability to digest them), and as much fresh milk as could be drunk, usually about a quart a day. After about two months in the country she returned to her work here in the city, and has pursued it for now almost a year with hardly a day's remission. She has gained twenty-four pounds in six months. Her cough has almost entirely disappeared, but the sputum still retains a moderate number of the tubercle bacilli. Her general health is good and she is able to handle her work perfectly well.

A peculiar complication occurred in this case which is worth considering for a moment. This patient, as I stated before, was an admirable one, and followed out the directions for forced feeding to the letter. Several times she forced her feeding beyond her limitations and developed acute gastritis, with inability to take any food for a week or two. I had warned her to be careful in this regard, but on account of her large gain in weight, and her general well-feeling and well-being from that treatment, she persisted in a forced dietary several times after this, even when her appetite was practically *nil*. The result has been that only a month ago she developed a horribly nasty case of gastritis, and has never been able to take food with relish since. This has taken off about five of the twenty-four pounds gain and has discouraged the patient somewhat. It will, I think, however, be a useful lesson to her to teach her to moderate at times her forced diet. Despite this the general condition of the patient may be considered excellent.

CASE II.—A young unmarried man aged twenty-seven, an expert accountant. He is a slight fellow, 5 feet 4½ inches high, and weighs 114 pounds, having lost 12 pounds in the last year. His family history is good, and his previous health has been likewise good, except that during the past year he has suffered with a cough, and with this loss of flesh as mentioned above. He has been under the care during the past few months of a physician who is likewise tuberculous, and who was so sick himself that he was wholly unfitted

to care for patients. The patient's temperature was almost constantly about 100°, pulse likewise 100, cough fairly constant, free mucopurulent expectoration, appetite poor, and coldness of all the extremities pronounced. Exploration of the chest disclosed a large area of infiltration over the supra- and infraclavicular regions of the left lung anteriorly. Tubercle bacilli were present in the sputum in large numbers. This patient was treated almost exactly as the first case recorded. He did badly, however, in the country, developed diarrhea, and felt that he was losing ground. He returned after a few weeks to the city, and has not left it since. Although he lived upon a noisy car line, with the dust of the street constantly disturbed and blowing in upon him, he nevertheless spent most of his time upon his veranda or taking short walks in the neighborhood until his temperature became normal, when he was permitted to take more exercise, and after the lapse of a couple of months to return to his work. He has worked steadily since last November, has maintained the weight which he gained during his months of rest, namely, 13 pounds, has a constantly normal temperature, and feels generally in fairly good health. I cannot see that the lesion in the lung is markedly changed, although I believe it has somewhat lessened in area. He developed February of this year a rectal fistula, which has added to his troubles, but it does not seem to have depleted his general vitality. The patient feels himself to be a fairly well man.

Case III.—A young married woman aged twenty-two, 5 feet 8 inches high, and 113 pounds in weight. Her family history is good, and her own previous record is likewise good, except for an attack of neurasthenia four years ago, which was relieved within a few months. The patient came under my observation following an attack of typhoid fever in her husband. She was ill while she was nursing her husband, and her husband's case being a somewhat complicated one, little attention was paid to her until after his recovery. Careful examination then disclosed that the cough and difficulty from which she suffered was due to a tubercular infection, the chest exploration disclosing infiltration of the upper lobe of the left lung in front, and sputum examination showing tubercle bacilli. She was treated almost exactly the same as the other two cases, and has done fairly well. She has gained 9 pounds in the six months she has been under treatment, and has maintained this weight despite repeated attacks of indigestion and diarrhea. She is a somewhat hard patient to handle, inasmuch as she becomes morbid and melancholy upon the first appearance of any slight adverse symptoms, and has to be constantly stimulated by suggestion and buoyed up by hope. She, however, expresses herself as feeling much stronger and better than when coming under treatment six months ago, enjoys a fairly good appetite, takes from two to four raw eggs daily in addition to her mixed diet, but balks entirely upon milk, being unable to drink it at all.

Case IV.—A young married woman of good family and excellent connections. She has one child aged eighteen months, who has been under my observation for the past year, being a case of difficult feeding and representing a lot of care on the part of the mother. The lady herself has been a patient of several other physicians, and came under my care only last December. She is tall and slender, 5 feet 7 inches in height, and weighing only 105 pounds. I found her suffering from a severe attack of neurasthenia, being morbid, melancholy, exhausted by the slightest effort, unable to eat, irritable, and generally sick. These symptoms she believed were due to the fact that she had "gone the pace" of society during the previous year, indulging in many of the foibles and a few of the extravagances of the social life of a large city. In this I was inclined to agree with her. She complained likewise of a slight cough, but attached little importance to it. I was suspicious of the cough, however, examined the sputum, and found tubercle bacilli to be present. I likewise examined

the chest carefully, but was unable to locate any point of infiltration in either lung. She was given the Weir-Mitchell rest cure for neurasthenia, a cure which by the way was likewise admirable for her tuberculosis, consisting of rest, massage, fresh air, and forced feeding. Under this treatment she improved rapidly, all her neurasthenic symptoms left her within a month, and within two months she was feeling very much herself again, being up and about the house, and participating occasionally in little social functions. A too great freedom in this regard, however, resulted in a nasty grippe attack which undid much of the good which we had accomplished, left her weak and debilitated, increased her irritability, and destroyed her appetite. It took me fully another month to get rid of these symptoms and put her back where she was before.

This I must confess is not an altogether encouraging case. The patient is high-strung, fond of gaiety, socially ambitious, and chafes under the necessary restraint of the cure. I have, however, discussed the whole situation frankly with her, and she has accepted it with a fair degree of equanimity, and has promised to aid us in the cure all she can. The combination, however, of severe neurasthenia with tubercular infiltration of the lung is not altogether a happy one for either physician or patient.

Case V.—A young physician who has suffered from several attacks of pleurisy with effusion. All of these have been relieved without aspiration, but about two years ago he commenced to lose flesh and to cough a good deal. Sputum showed tubercle bacilli, and exploration of the chest disclosed rough breathing over the upper borders of both lungs in front and thickening of the pleura of both lungs behind. About a year ago he consulted me with reference to his lungs, having in the interim been off for six months in the country in the fruit belt, living his entire time out in the fresh air and picking fruit, partly for pastime and partly as a means of livelihood. By this method of treatment he gained considerable flesh and strength, and decreased to a large extent his cough. I have seen and advised him at intervals during the past year. He has been able to resume his practice in a small country town, to which he removed partly on his own account, and partly on account of a tubercular sister whose case will be cited shortly. It is not necessary to go into the case in detail; suffice it to say he has done enough practice to support himself, his sister, and his sister's child, and has kept himself in fairly good condition. The lungs are still diseased of course, but he is generally in fair health. During the inclemency of the past winter he had several colds, which used him pretty roughly, but by discontinuing night work and country driving he has been able to keep himself in fairly good condition. The case is rather remarkable inasmuch as the man has been able to preserve his own independence and support two others besides himself while suffering as he is.

Case VI.—Is the sister of the previous patient. The probability is that she acquired the disease from her brother. She is a widow of about thirty-five years, with one child aged six. This patient found it necessary to work to support herself, but when she came under my observation was so weak that work was out of the question. Both lungs were invaded at their apices, temperature was about 100° constantly, and patient was coughing a sputum containing tubercle bacilli in goodly numbers. She had been employed in a close factory, and found it necessary to take street-cars early in the morning, when they were cold, insufficiently heated, and wretchedly ventilated. The hygiene of her house was likewise not any too good, and all in all the general conditions were what might be termed bad. I advised very strongly her removal to the country. Her brother rose to the emergency, opened an office in a country town adjoining Detroit, took his sister to keep house for him, supplementing my instructions for suitable hygiene by concrete example of right living, and has enabled her to so improve her

physical condition that she is now perfectly able to attend to the household duties for herself, her brother, and her daughter. She is not by any means cured, but is certainly vastly improved.

CASE VII.—The sister of Case II. She came to see me not about any cough, but about a condition consisting of malaise, anorexia, pain in the lumbar region, and general debility. I explored her lungs and examined her sputum and found nothing wrong, but with the brother's case before my eyes, with the possibilities of contagion so evident and with the general condition of debility so manifest, I concluded this to be a case falling into the pretubercular list. I could not, of course, diagnose anything tubercular in the case, but I was afraid of it, and felt that I owed it to her to put her in condition to fight off the germ before it obtained entrance to her system. I therefore proceeded by rest, by diet, by tonics, and by systematic education in breathing, etc., to build her up. She responded beautifully, and in a short time was in my estimation out of danger of any immediate infection. Possibly this patient would never have developed tuberculosis, but I was not going to take any chances, and by putting her where she is, in a condition of vigorous womanly health, I feel that I have done for her the best that any man could do under the conditions existing.

I have considered only those cases which have been continuously under my care for the past year, as they alone were susceptible of careful study and analysis. The floating cases which one sees twice or thrice, or only as a consultant, are not to be considered as possessing any value as cases for study, or as cases from which any conclusions whatsoever might be drawn. I have therefore not referred to this class at all.

As to the very pertinent question of medication in the cases under observation, I may answer it by saying that medicine was given an entirely subordinate part in any case under treatment. That medicine has its place goes without saying, but that it should occupy the position of paramount importance which it occupied some years ago is, in the light of modern investigation and experience, absurd.

In my cases creosote was given as a rule in one- or two- or three-drop doses in milk, after meals, as a tonic and intestinal antiseptic. It was never given with the idea that it had any great healing power over the diseased lung tissue, although through its excretion by way of the respiratory tract some antiseptic power even there may be evolved. Small doses of quinine, for their stimulating power upon leucocytosis, and for their powerfully tonic action on appetite and digestion, was frequently a recourse whenever conditions seemed to warrant.

Constant care of the digestion, and excretion through the intestinal tract, were enjoined upon all of the patients. With forced feeding in any case, free bowel action is a *sine qua non,* otherwise the effects of stagnation in the whole digestive tract become in a very short time the predominating symptom in the clinical picture.

Serum or vaccine treatment was considered only to be dismissed, inasmuch as it has no practical basis upon which to found a therapy. The opsonins may, and doubtless do, contain potentialities, but they have in no wise been reduced to a practical concrete form for the treatment of tuberculosis.

SUMMARY.

1. All cases under observation have received little treatment except rest, fresh air, and forced feeding.

2. Internal medication has been used wherever necessary, usually to meet symptoms and to cure any aberration from the normal plane of health, at the earliest possible moment.

3. All cases have been relieved of the evening rise of temperature.

4. All have gained in flesh—the maximum gain being twenty-four pounds, and the minimum five.

5. All patients have been able to resume their ordinary avocations, and have

been able to support themselves, and in some cases aid in supporting others.

6. The lung lesions have shown no striking improvement on physical exploration, but the general sense of well-being in all cases has been marked.

7. All these patients understand the condition of their lungs perfectly, all are hopeful of a cure, and all are filled with the belief that they will be cured, a belief which I, by the way, have carefully fostered.

8. All of these patients, understanding the condition of the lungs and being educated for the care of their sputum and excretions generally, are centers for a dissemination of knowledge of this white plague.

9. Only by a wide-spread dissemination of this knowledge can we ever hope to stamp out the scourge; and only by careful instruction of our patients can we hope to eliminate them as potent factors for evil through the medium of their sputum.

10. None of these cases have been cured in the year, but all have been checked, and all have been improved.

AORTIC DISEASE.

In the *British Medical Journal* of March 16, 1907, RANKIN tells us that in the treatment of aortic disease the primary object to achieve is the establishment and maintenance of sufficient compensation. In a patient, cited as an illustrative case, who suffered recently from rheumatic fever, the chances are that his compensation never became firmly established—that is to say, that the length of time over which he rested and the amount of care which was taken of him otherwise after his acute illness was not enough to build up his myocardium against the strain of his subsequent life. In addition to this he has been careless of himself, and has indulged in alcohol freely and unwisely. Consequently he comes with all the evidences of broken compensation, which fortunately for him has not gone beyond moderate pulmonary congestion. The mitral murmurs have almost disappeared; the cardiac rhythm is regular; the locomotive pulsation in the vessels has diminished, and there is a distinct though feeble second aortic sound to be heard in the carotid arteries. There is now no cough and no physical signs in the lungs; the liver dulness has become normal. He is taking food well and is sleeping comfortably in a normal position the night through. This amelioration has taken place under the influence of complete rest in bed, a simple and moderate diet, regulation of the bowels by means of salines, and an occasional small dose of calomel. At first he took a mixture of sodium salicylate, digitalis, strychnine, and ammonium carbonate; this was followed later on by another, which he is still taking, containing dilute phosphoric acid, iron perchloride, nux vomica, and strophanthus.

The only point worthy of comment in the medicinal treatment of a case of this type is the employment of digitalis. The old tradition that digitalis is a dangerous drug in aortic disease clings to many of us so pertinaciously that we hesitate to avail ourselves of its valuable assistance. This is not, the author thinks, good practice. The true action of digitalis is that of a tonic, the best of all we possess, to the myocardium. When compensation is well maintained, its exhibition is never indicated, but whenever this fails it should be called to the rescue, irrespective of the nature or situation of the valvular lesion. Not only so, but at the outset of its administration the drug may be given advantageously in bolder doses than are customarily employed. Fifteen minims of the tincture every four hours may be ordered with perfect safety, if we are careful to watch its effects and curtail the quantity when we get evidence of saturation. That evidence is forthcoming in an abnormally slow cardiac rhythm, diminished urinary secretion, and disturbance of the digestive organs. In many instances the good effects of the drug are evidenced only after these physiological effects are produced. No harm ever results if, at this stage, the drug is either temporarily withheld or its

quantity diminished to 7 or 10 minims every eight hours. Strophanthus and convallaria are recommended as valuable alternatives which are better suited to aortic conditions; but though they are useful remedies, their good effect upon the heart falls far short of digitalis, and it is by no means uncommon to find a speedy improvement under the influence of digitalis when the others have failed to bring about the least response.

Another point about the administration of digitalis which is not sufficiently recognized is the safety that may be secured by its combination with nitroglycerin. In all cases in which vascular tension is high the one-per-cent solution of nitroglycerin given along with the digitalis prevents increase of peripheral resistance, and so robs the digitalis of that influence upon the arterioles on account of which its administration is supposed to be contraindicated.

In the case of another patient, who likewise improved decidedly, the treatment has been somewhat different. His chief complaint, when first admitted, was of pain in the chest on exertion; shortness of breath, which prevented his lying down in bed at night; and recurring anginal attacks of a severe type. This is a combination of symptoms with which we are familiar, and which is enough of itself to suggest aortic disease. This case is one belonging to the degenerate type of this ailment, but in addition to the knowledge gained of his present condition from physical examination made by the author, he recalls that when first seen his pulse was one of very high tension. A leading indication for treatment was found, and in accordance with the author's usual plan in cases of this description, the patient was at once put on a mixture of potassium iodide and nitroglycerin. Both these drugs, and especially the latter, are valuable vasodilators, and under their influence this man rapidly experienced relief to his breathing and diminution in his precordial discomfort. He was kept closely confined to bed, his diet was simple and mostly "sloppy," and every night for a week he was given one grain of calomel, followed in the morning by a moderate dose of ordinary "white mixture." After ten days he was so much better that he was put on iodide of iron, strychnine, and strophanthus, and allowed a greater amount of freedom in regard both to diet and exertion. He has had no recurrence of his anginal attacks since a few days after his admission; he is now able to sleep comfortably in the ordinary recumbent position; and a moderate amount of walking exercise can be indulged in daily without producing either cardiac discomfort or undue physical fatigue.

As regards the dosage of the iodide and nitroglycerin in cases of this description, the author thinks we often err in making the quantities too small—15 grains of sodium iodide protected by 2 minims of Fowler's solution, and combined with 2 minims of the one-per-cent solution of nitroglycerin, may with perfect safety be given every four hours. Whenever the pulse becomes soft and begins to quicken, longer intervals should be allowed between the doses, and eventually the nitroglycerin may be wholly withdrawn and the iodide continued in smaller amount, say 5 grains, along with strychnine and one or other of the milder preparations of iron. In regard to calomel, its value is not confined to its aperient effect; it is a useful intestinal antiseptic as well, and also assists in diminishing the tension in the arteries. Obviously the nature of these patients' occupation is inimical to the maintenance of their circulatory balance when they return to work. They are urged to find a new field for their labors, in which exposure, muscular strain, and dietetic irregularity will enter less into their daily experience, but it is difficult for most men after middle life to embark upon a new calling, and many of the cases ultimately succumb to the circumstances of environment which is unusually trying and hard, even for those who are in the possession of full vigor and healthy organs.

EDITORIAL.

THERAPEUTICS AND COMMON SENSE.

During the last hundred years the medical profession has passed through moods which closely resemble the moods of an individual—at one time optimistic, at another pessimistic; at one time ladling out potions with undue generosity, at another time withholding all medicines on the ground that they do nothing but harm, but on certain occasions exercising common sense, recognizing that some conditions were incurable by drugs, and also fully appreciating that many remedies, if properly administered, were capable of producing much good. In the earlier part of the past century much of the pessimism in regard to the administration of drugs arose from the fact that there did not exist any adequate conception of the physiological or pathological processes which were present in the patient's body, and also because, in not a few instances, the doses which were given were so heroic as to be quite capable of producing a condition which was worse than the disease. Later, with the advances which took place in physiology, pathology, and bacteriology, the seemingly utter hopelessness of attempting to combat perverted and diseased functions staggered the practitioner and drove him into a condition in which he was prone to consider that any struggle against disease was almost hopeless. At times this pessimism has, however, been swept aside by the further discovery that many of the remedial measures which have been employed with success in the past, upon a purely empirical basis, have in reality sound scientific standing. Perhaps one of the most interesting of these is the fact that alkalies and purges of the saline class are useful in many cases of urticaria, not because, as was at one time considered, the condition of the juices of the body is acid, but because the alkalies combine with certain acids in the intestinal canal which are capable of combining, and so abstracting certain salts from the blood, which, being abstracted, cause extravasations to occur. So, too, the saline purges, such as magnesium sulphate, which was at one time supposed to do good simply by purging the intestine, are now known to do good because the magnesium increases the coagulability of the blood, and so diminishes the tendency to capillary leakage or transudation.

Many other illustrations of a similar character might be brought forward, but the real object of this editorial note is to urge our readers not to be carried away by undue enthusiasm and not to be warped and discouraged by useless pessimism; or, in other words, to hold fast to that which is right, and not to be ready to accept things as right until they are carefully thought over. One of the reasons why remedies fail to give the desired results lies in the fact that many physicians when examining a patient only seek for one cause of his illness, and having found this, are entirely satisfied with their diagnosis, entirely neglecting the fact that the symptoms presented may be due to more than one cause. Thus, in a case which recently occurred in Philadelphia, a married woman was admitted to a hospital during the third week of typhoid fever in a condition of collapse, and was supposed to be suffering from either perforation or hemorrhage from an intestinal ulcer. Abdominal section was performed, and to the amazement of the operator a ruptured extrauterine pregnancy was found to be the cause of the condition of the collapse, a condition which would have been thought of first had it not been that the patient had been ill for some time with enteric fever. Again, it is quite possible for a patient who is suffering from severe abdominal pain of the right side to have both appendicitis and cholecystitis, yet some of us would be quite content with finding

one of these conditions, and regarding it as the sole cause of the difficulty.

In connection with these remarks we have been much interested in an anonymous letter which has been sent from Paris to the *Boston Medical and Surgical Journal* of June 13, 1907, in which the writer, evidently a physician, exclaims against the common habit of practitioners of administering various extraordinary drugs to meet conditions which are popularly believed to be the cause of certain disagreeable symptoms. As he points out, the idea that uric acid is responsible for a host of morbid states was promulgated some twenty years ago, and having been accepted by physicians with an enthusiasm entirely unjustifiable, has reached the laity, who are now prone to regard every ailment as being due to this cause, when, as is well known, uric acid itself is a normal product in the body, and even when injected into the blood in considerable quantities is incapable of producing any deleterious effects or grave symptoms. Finding that lithia, when mixed with uric acid, formed a soluble urate of lithia, the conclusion was at once jumped at that lithia would be a useful thing in the so-called "uric acid diathesis" to aid in the elimination of this substance, when, as a matter of fact, the action of lithia in the body is quite different from that of its effects in the test-tube, since it has a greater predilection for the acid sodium phosphate of the blood, which fluid it may damage by taking out this important ingredient. Again, it has been freely administered whenever the physician found an excess of uric acid and urates in the urine, when, as a matter of fact, this excess in the urine showed that the patient was getting rid of an excess of uric acid. As has been pointed out repeatedly, if lithia is ever needed for uric acid, it should be given to those patients who are passing too little and not too much of this substance.

After lithia had had its vogue a rival was introduced in the shape of the more extensive product known as piperazine, which was stated to be twelve times as powerful as lithia in dissolving uric acid. Later still, lycetol appeared as a rival of piperazine, and both of these substances were for a time popular until they had been weighed in the balance. Since then a series of other uric acid solvents have been introduced.

It would seem that the time has come when the uric acid idea should receive its quietus, but as is well said by the writer that we quote, "if it were possible to kill the uric acid idea, nail it up in a coffin, and bury it under six feet of earth, it would still find means to ooze out through the pores of the wood so that the earthworms could bring it again to the surface as they do the anthrax bacilli." Once more we quote from this clever contributor when he says that "the uric acid theory seems so plausible to many persons that their mind takes the same trend as that of the woman with mammary carcinoma, who never rests until somewhere in the remote past she can remember having fallen against the corner of a piece of furniture and damaged her breast."

Finally, let us recollect, whenever we are tempted to administer remedies too freely, that, after all, drugs and remedial measures other than drugs are designed to help nature, not to force it; that in many instances nature, if left to itself, will produce cures which are so far beyond our comprehension as to be perfectly marvelous; and let us inculcate into the minds of our students and patients the fact that quiet and rest and patient waiting for nature's processes will often produce a cure most quickly, particularly if gentle remedial measures are cautiously employed. As the correspondent quoted points out, "How often do we see a dog who has overeaten himself withdraw from its customary surroundings and spend hours or days in a condition of quiet starvation until his system has combated his excesses and readjusted its mechanism. The dog has sense enough to refuse tempting articles of food at such a time. Man too frequently, when feeling ill from overeating, eats much and

takes drugs at the same time, and yet we who have not the sense or patience of the dog give this animal the somewhat insulting title of *canis vulgaris sive domesticus.*"

Let us give drugs bravely and freely when there is a good reason for their administration, and refuse to give drugs, with equal bravery, when a careful examination of the patient convinces us that he will do best without them, for the administration of drugs must be like the use of paint by the great artist, "mixed with brains" if it is to produce good results.

THE VALUE OF PICRIC ACID IN THE TREATMENT OF BURNS.

The readers of the THERAPEUTIC GAZETTE will probably remember the interesting symposium upon the treatment of burns which was contributed to the June issue. At that time we had not seen the remarkable report made by Dr. Kindleberger, a surgeon in the United States Navy, to the *Military Surgeon* upon the treatment of the burns which occurred at the time that the U. S. S. *Bennington* suffered from a boiler explosion in July, 1905, at San Diego, California. The symposium to which we refer was almost unanimous in indorsing the value of picric acid in the treatment of various forms of burns and scalds. In the report of 52 cases which were treated in the temporary Naval Hospital, which was established immediately after the disaster to which we have referred, we find that the following method of treatment was carried out:

The clothes were removed, the dirt and grease washed off with tincture of green soap and ether, and the sloughs and dead skin cut away. If the wounds had already been dressed with some oily preparation they were gently wiped with some sterile cotton, and all oozing surfaces were dried in the same manner. After this sterile gauze soaked in a one-per-cent solution of picric acid was applied to the burnt surface, covered with paraffine paper, cotton pad, and gauze bandage. If the face was burnt it was entirely covered with a gauze mask soaked in the picric acid solution. The dressings were changed each day. It was noted in particular that those cases which had been previously treated with oils and ointments, and which were admitted with burnt surfaces bathed in pus, and suffering from high fever, improved rapidly under this method of treatment. The picric acid solution caused pain for ten or fifteen minutes after it was applied, but later had an anesthetic effect, the pain being less each time the wounds were dressed.

It was pointed out in the symposium to which we have referred that picric acid solution stains the skin, and therefore surgeons and nurses are to use rubber gloves when applying it.

It is supposed that the picric acid solution by coagulating albumen aids materially in stopping oozing and pus formation, and also in preventing the absorption of toxic material. After the first few days' dressing it may be applied every other day or every third day.

After the gauze is removed the burnt part should be irrigated with picric acid solution, and if the gauze adheres it may be softened with picric acid solution before it is taken away so that it will not tear the new granulations. Where fingers or toes are burnt, layers of picric acid gauze should be placed between the parts to prevent adhesion.

In this connection it is interesting to note that in every case in which this treatment was applied on the occasion that we have spoken of, the urine was dark-red and frothy when passed, this trouble being attributed to hemoglobinuria and some carboluria. Frequent urinary analysis showed no albumin, and the discoloration of the urine was regarded as being of no importance. Those patients who had not only discolored urine but high fever at night were given small doses of magnesium sulphate for its antidotal and purgative effect.

Kindleberger concludes, as the result of his large experience, that the picric acid method is one of the best that can pos-

sibly be instituted. He also calls attention to the statement made by Surgeon Braisted of the navy in his report on the "Japanese Naval Medical and Sanitary Features of the Russo-Japanese War," to the effect that many extensive burns were treated among the Japanese by means of a solution of picric acid, though Dr. Kimura told him he intended to recommend the use of chloretone for this purpose. Finally, Kindleberger goes so far as to state that his experience shows clearly that picric acid should be the local treatment used in all burns, no matter how severe or extensive, if one wants to get a clean wound, rapid healing, diminished fever, and lessened scarring, and he regards this use of picric acid as being in the same class as the use of antitoxin in diphtheria, mercury in syphilis, and quinine in malaria.

AN OVERLOOKED METHOD BY WHICH TYPHOID FEVER IS DISTRIBUTED.

The profession of medicine has as one of its most beneficent functions the earnest endeavor on the part of its votaries not only to cure disease which is already in existence but to protect the well from illness, and it is a remarkable fact that most of the great advances which have been made in medical science within recent years have been along the line of preventive medicine, and have been chiefly devised to maintain health in the population of cities and country districts.

As we have often pointed out in these columns on other occasions, it has been proved beyond all doubt that fleas and roaches do much toward distributing typhoid and other infections, and for the last twenty years the importance of destroying the discharges of typhoid fever patients as soon as they escape from the patient's body has been well recognized, even if it has not been carefully carried out. Many physicians who are careful in regard to such matters not only insist that the patient's discharges shall be destroyed as soon as they escape from the body, but also recognize that the urine for some time after an attack of typhoid fever is often laden with enormous numbers of typhoid bacilli, and that the convalescent patient who is quite well enough to travel can therefore carry the disease from point to point, and by contaminating water or food supplies give rise to many epidemics. For the purpose of preventing this form of bacilluria, it has been well proved that the administration of urotropin or uritone is exceedingly valuable.

A remarkable instance of the ability of a person apparently in perfect health to cause repeated epidemics of typhoid fever is recorded by Dr. George A. Soper in the *Journal of the American Medical Association* of June 15, 1907. In this particular instance no less than seven outbreaks of typhoid fever, including 26 cases and one death, occurred during a period of five years, and the disease broke out in families at Oyster Bay, N. Y., Sandy Point, N. Y., at Dark Harbor, Me., in the city of New York, at Mamaroneck, N. Y., Tuxedo, N. Y., and again in the city of New York in 1907. A careful examination of the water-supply and the general sanitary conditions surrounding many of these cases proved conclusively that they could not have been developed from any ordinary source. Ultimately it was found that in these different places there was employed a woman in the capacity of cook for the family. After a large amount of detective work and the careful investigation of the entire matter by the New York City Department of Health, it was found that this woman had been present before every epidemic that developed, and believing that she had something to do with the dissemination of the disease the woman was taken into custody in the city of New York with the object of having her excretions carefully examined bacteriologically. As she refused to give her consent to the making of these examinations it was found necessary to resort to legal measures and to enforce them for the sake of the community. She was therefore removed to the Detention

Hospital after a severe struggle in which she showed remarkable bodily strength and agility. It was expected that her urine would be found to contain a large number of bacilli, but none were found in this secretion. On the other hand, her stools contained the germs in great numbers, and daily examinations made for over two weeks failed only twice to reveal the presence of the bacillus typhosus. Her blood also gave a positive Widal reaction. During the whole time the woman appeared to be in perfect health. In other words, all these years she was a chronic typhoid germ distributor, and caused an outbreak in seven of eight families in which she was employed, although she seemed to be in perfect health in every instance. As she refused to give any information in regard to her early history it was impossible to determine how long before she had been a sufferer from the disease.

The moral of this most valuable investigation is not far to seek. It emphasizes the fact to which we have already referred, that patients during convalescence from typhoid fever should always receive intestinal and urinary germicides, and should be regarded for a long time after recovery of good health as being possible sources of further illness.

THE LUNG COMPLICATIONS FOLLOWING OPERATION.

Under this title, always of fresh interest to the surgeon, Wolff (*Deutsche Zeitschrift für Chirurgie*, 88 Bd., 1-3 H., 1907) contributes an article mainly of interest because it comprises the results of experience in a single hospital—experience gained in a large service and under various methods of anesthetization. Wolff calls attention to the irritating effect which ether has upon the respiratory tract, noting that the effect is purely toxic and that it will produce an inflammation so acute as to cause suppuration even in the absence of bacterial invasion. Moreover, he quotes Poppert to the effect that as a result of ether inhalations, particularly in the concentrated form, multiple hemorrhages occur in the lung substance, often with closure of smaller bronchi. Thereafter is quoted a considerable quantity of contradictory laboratory evidence, none of it having much direct clinical bearing, with a discussion of the lung complications following narcosis, whether this be embolic, or the result of infection from material aspirated from the throat, or the result of direct inflammation caused by the anesthetic vapor. The various theories by which an attempt is made to explain the frequency of pneumonia following abdominal operations are exploited at length, together with an amazed comment on Gottstein's well-known statistics showing that pneumonia is more frequent after laparotomy performed under Schleich's anesthesia than under the use of a more general narcosis. Mikulicz is also quoted to the effect that the percentage of pneumonia after struma and belly operations, with the exception of gastrostomy, is larger after Schleich's anesthesia than after a general anesthetic.

The lung complications which may occur during and after operation are bronchitis, lobular pneumonia from aspiration, hypostasis with infection or infectious or non-infectious embolus, lobar pneumonia, abscess or gangrene of the lung, hemorrhagic embolic infarct, lung embolus, and acute edema of the lung. Hypostatic pneumonia, or that due to aspiration, usually appears within twenty-four hours, certainly within the first three or four days, often with very moderate clinical symptoms. Embolic pneumonia may not appear for one or two weeks. It is characterized by sudden onset, pain, fever and pleuritic exudate, and by suppurating, often bloody sputum. Clinical evidence is usually found between the point of the scapula and the spine.

Wolff contributes his experience based upon over three thousand operations, and notes that from 1902 to 1905 he used almost exclusively ether, the so-called Billroth's mixture. Since 1905 he has used

almost exclusively chloroform. Ether was given by means of Juillard's mask. It is often preceded in cases of belly operations by injections of morphine. Of 1806 ether narcoses there were lung complications in 96—*i.e.*, 5.3 per cent. Of 744 narcoses with chloroform and ether there were 72 lung complications—*i.e.*, 9.8 per cent.

It should be noted that the mixed narcosis was used very often in people who had inflammation of the respiratory tract. Five hundred and thirty-two operations were subject to chloroform alone; 24 of these exhibited lung complications. In other words, the smallest percentage of lung complications followed the use of chloroform.

The substitution of chloroform for ether based on this large clinical experience is in striking contrast to the practice of American surgeons. In the great majority of our clinics lung complications have practically disappeared, not by a change of anesthetics, but by a careful choice of the anesthetist, and by the open method of administering the anesthetic.

PROPHYLAXIS AND TREATMENT OF INFECTIONS OF THE PERITONEUM THROUGH THE AGENCY OF NUCLEIN.

Under this title Chantemesse, as reported in the *Klinische Therapeutische Wochenschrift*, holds that by the injection of nuclein, particularly in its acid form, combined with soda, in one-per-cent solution, the peritoneum may become so resistant to bacterial invasion that the perforations, for instance, of typhoid fever may be made completely innocuous, thus doing away entirely with the need of operative treatment, or causing the symptoms of peritonitis to advance so slowly and with so little systemic shock that intervention may be practiced without the need for haste.

Chantemesse points out the difficulty attendant upon distinguishing between the true typhoidal perforation and other conditions which may simulate it, notably a deep ulcer producing symptoms of peritonitis and associated with tympany. He finds that the subcutaneous injection of nuclein produces in six or eight hours a very pronounced mononuclear hyperleucocytosis, steadily increasing for two days and persisting for four or five days, after which this gradually lessens. The injection of one centigramme of a one-per-cent solution of nucleinate of soda into a vein causes in the course of two or three hours a slight shivering sensation with a jump in temperature. This aseptic fever lasts but a short time and is accompanied by a most pronounced leucocytosis. The dose advised for man is 40 cubic centimeters of physiological salt solution containing 0.40 of nuclein acid sodium. This injection causes pain, which the author ingenuously states may be relieved by a cataplasm containing opium, though he does not sufficiently explain how opium can produce any local analgesic effect. Not only are the leucocytes increased in number, but also the opsonic index of the blood is correspondingly modified, the author stating that in one case of typhoid perforation in which the opsonic index was 1.60 this has been raised to 2.5 twenty-four hours after the injection. At the same time the symptoms of peritonitis were rapidly retroceding. The subsequent history of this case, however, is not given. The author acknowledges that there is severe local pain, which he considers of trifling moment, as also the fever and general wretchedness following the injection. These symptoms are transitory, lasting but a few hours. Chantemesse's indorsement of these injections in the case of a strong patient who can wait twenty-four hours for an operation is unqualified. He also is inclined to advise this treatment for operations of such nature, or so complicated, as to make the development of an acute peritonitis probable. The nuclein injections are advised not only as a means of strengthening vital resistance, but are also suggested in the treatment of erysipelas and pneumonia.

This paper represents a clinical applica-

tion of certain laboratory facts, an application apparently not founded on experience and based on deductions which to say the least are far-fetched and inconclusive. There may be surgeons who would be content in the presence of a probable post-typhoidal, appendicular or cholecystic, gastric or duodenal perforation to inject 40 cubic centimeters of the acid nuclein preparation, waiting twenty-four hours for the misery of this injection to pass, and then proceed to open the abdomen with full confidence that hyperleucocytosis produced by this nuclein injection would more than compensate for the evil effects of delay. It is barely possible that some such procedure may be universally adopted. It is fortunate for the sake of science that some at least of our foreign colleagues are willing to experiment in their clinics with hypothetical questions rather than devote themselves in each individual instance to the prompt application of the best that is known for the saving of human life. It is possible that by means of nuclein injections the systemic and local resistance to injection may be greatly increased. It is scarcely conceivable that the benefit accruing from this increase can for a moment compensate for delay in operation.

REPORTS ON THERAPEUTIC PROGRESS.

SOME NOTES ON THE CONTROL OF SUPERNORMAL ARTERIAL PRESSURE.

In the course of an article on this topic in the *Lancet* of May 18, 1907, OLIVER says that when the arterial pressure is raised the principal aim in dietetic directions should be to select a diet which has the least stimulating effect on the circulatory organs. Hence we should reduce as much as possible not only the bulk of each meal but also the proportion of those constituents of the foodstuffs which more particularly stimulate the cardio-vascular apparatus, such as various salts, soluble extractives, active principles and other bodies (*e.g.*, alcohol), which are directly absorbed without change and may be regarded as exogenous hormones between the digestive tract and the circulatory apparatus, stimulating the heart on the one hand and the capillary circulation on the other.

Most observers are well agreed that the supply of meats of all kinds should be lessened below the proportion ordinarily taken, and some are satisfied merely to reduce or to disallow the red meats (beef and mutton), while they permit the taking of white and young meats (fish, poultry, veal, etc.) in ordinary quantities. Though the practitioner nearly always is inclined to select what are called lighter meats, the author has noticed no difference of effect on the arterial pressure of the various forms of roast or fried meats —whether as beef, mutton, fish, poultry, etc. A more important difference in this respect seems to him connected with the way in which the meats are cooked—whether roasted and taken with the gravy, or boiled and served without the broth. He therefore makes it a rule in these cases to substitute as much as possible boiled for the roasted or fried forms of fish, fowl, beef, mutton, etc.; and to exclude from the dietary meat extractives, such as meat soups, gravies, etc. The proportion of green vegetables and fruits should be increased and carbohydrate foods may be taken in moderation. As a rule he thinks the cases do best on the reduction of an ordinary diet as a whole, with a diminution of the animal and an increase of the vegetables derived from foodstuffs. The reduction of the ingesta to physiological needs and expenditure is particularly important in the management of cases of high arterial pressure; for some such patients who are inactive feel weak

and run down and crave for the stimulant effects of tonics and a full meat diet, with excess of salt and other condiments, and sometimes of alcoholic drinks.

The question of fluids—their nature, quantity, and best time for their ingestion—is not a matter of indifference. The bulk of the meals should be kept down by reducing the quantity of fluid taken with them. Fluid, of which the best is water, should be taken more freely when the stomach is empty—*e.g.*, a tumbler an hour before meals or night and morning. Preference should always be given to soft or distilled and non-aerated water; or to mildly alkaline waters, as potash and soda salts improve the peripheral circulation; and it is best generally to advise the water to be taken warm. Hard water—*i.e.*, water containing calcium salts in such proportion as to raise the hardness above five degrees—is best avoided, especially in the elderly with a premature rise in the arterial pressure, in whom there may be an inadequate elimination of calcium salts by the bowels and kidneys. Though calcification is generally believed to follow and not to precede degeneration or involution, it may turn out that inadequate elimination may lead to the deposition of calcium salts in the arteries, kidneys, and other tissues of the aged. As the combination of calcium with an organic acid (*e.g.*, citric) deprives the calcium ion of its specific physiological effect on the blood, the addition of lemon juice to hard water may be a useful corrective in the elderly and gouty.

The question of beverages, such as tea and coffee, is still somewhat unsettled, some observers regarding them as particularly injurious. Long-continued indulgence in strong tea and coffee is, the writer believes, injurious, but he sees no objection to these beverages in strict moderation, and when their ingestion is not followed by disturbing results, such as palpitation, flushing, giddiness, or wakefulness. As to alcoholic beverages, his impression is that high-pressure cases as a class are better without them, but that many cases of moderate or slight increments of pressure may be allowed small quantities without injurious effects, especially if, as a rule, we exclude wines and beer. There is no doubt that when the vasomotor system is intact alcohol (as in the form of whisky or gin) is a vasodilator and has but a transitory effect in raising the systolic pressure. The latest experimental work on alcohol (that of Prof. W. E. Dixon, of Cambridge) shows that in moderate doses alcohol in normal animals and in man may raise the systolic pressure a little (and especially in animals showing signs of circulatory failure), but it may fail to do so, while it diminishes the diastolic pressure ("in other words, the difference between the systolic and diastolic pressure tends to increase"), and that it increases the activity and output of the heart, an effect which is ascribed to the fact that alcohol is a readily assimilable food substance.

Chloride of sodium as a constituent of foodstuffs and as a condiment deserves some notice in the treatment of supernormal arterial pressure. The works of Widal and Javal and other continental observers have shown that superchloridation and superhydration of the tissues take place when the kidneys become impaired in their permeability to the passage of chlorides, as in chronic nephritis, and probably in other phases of renal inadequacy not recognized as organic; and that some of the manifestations of Bright's disease (*e.g.*, edema, albuminuria, etc.) are closely associated with this tissue retention of chlorides and water and are relieved by a dechloriding diet. The author is not as yet prepared to state what is the rôle, if any, which the retention of chlorides plays in the production of the high ranges of arterial pressure which we meet with in chronic interstitial nephritis. Probably it is insignificant. To apply efficiently a dechloriding diet the mere omission of salt as a condiment is insufficient. We must besides this select those articles of food which in the uncooked state contain the least percentage of salt, and omit the

addition of salt in their preparation for the table. The diet thus obtained is practically, though not absolutely, chloride-free. Such a saltless diet may consist of vegetable soups (made without meat stock), fresh green vegetables, fruits, nuts, fats (fresh butter, cream), salt-free bread, farinaceous vegetables (potatoes, rice, peas), and sugar. Dufour (in 1905), Guinin and Pater (in 1906), and Déléarde (this year) obtained excellent results from a dietary like this in scarlet fever and scarlatinal nephritis. But in chronic nephritis and in other cases of high arterial pressure such a strict chloride-free diet will scarcely be necessary, though it may perhaps be adopted with advantage for a while now and then when accessions of pressure arise. In fact, a saltless diet soon becomes so distasteful to the majority of patients that it is difficult for them to continue it for more than a week or two at a time.

A strict milk diet, sufficient in quantity to maintain the health and condition of the patient—*e.g.*, six pints a day—supplies to the system from 100 to 200 grains of salt (different authorities giving the salt percentage of milk as ranging from 1.6 to 3.0), so that such a diet is by no means saltless. Nevertheless, experience shows that a milk diet or a lactofarinaceous diet for a few weeks has sometimes an excellent effect on high arterial pressure and on the general health. Unfortunately, milk is often badly borne in these cases, especially when the bowels are inclined to constipation and the liver is inactive; but even then it may often be made to agree by adding to it citrate of soda or potash, or when there is gastric acidity, sodii bicarbonas or liquor magnesii carbonatis. But a lactovegetarian diet is more suitable in most cases; a moderate daily quantity of milk (*e.g.*, two or three pints) when taken with vegetable foodstuffs (bread, rice, green vegetables, and fruits) should not seriously raise the low percentage of ingested salt, and, moreover, it advantageously increases the proportions of the proteid and fat, especially when combined also with cream, cheese, and eggs. Cheese in moderation is perhaps the least objectionable form of proteid in these cases. Meats of all kinds contain even a smaller percentage of native chloride than that of milk; but the cardiovascular stimulant effect of the extractives which they contain more than counterbalances any advantage they possess in their relatively low percentage of salt. Boiled meats, however, containing less salt and extractives than roast meat may be added to the dietary without disturbing its comparatively salt-free character. Fresh-water fish (such as trout, tench, pike, and crayfish), which contain much less salt than salt-water fish, may also be taken if we do not require to adhere to a strict minimum supply of ingested salt. The condiments—pepper, mustard, vinegar, lemon, etc.—none of which are contraindicated, are useful in relieving the insipidity of the dechloriding diet.

THE TREATMENT OF DELIRIUM TREMENS.

EICHELBERG (*Münchener medicinische Wochenschrift*, May 14, 1907) reports 1574 cases of delirium tremens treated in the service of Dr. Nonne in the Hamburg Expendorf Hospital. Of this number about two-thirds were uncomplicated. The mortality of the entire series was 5.5 per cent, which is very favorable in comparison with other statistics.

No specific treatment is employed at present, as no good results were obtained with the various hypnotics, nor from those hydrotherapeutic measures generally recommended. Alcohol is withdrawn immediately in all cases except those complicated with pneumonia. The principal thing to which attention is directed is the maintenance of the heart's action. As soon as the pulse shows signs of failure, digitalis, strophanthus, camphor, or caffeine is freely administered. On the third day, when the delirium usually begins to wane, 2 to 4 grammes of chloralamid is given. This results in a more protracted period of sleep, which, however, usually comes on sponta-

neously about this time. It is only in exceptional cases that it becomes necessary to isolate patients because of violence.

SUPRARENAL GLANDS AND OSTEOMALACIA.

Professor Bossi continues the interesting observations which he made in regard to the curative action of adrenalin in osteomalacia (see *Centralblatt für Gynäkologie*, 1907, No. 3, and in No. 6 of the same periodical). The patient who was treated first has given birth, in the meantime, to healthy twins. The childbirth was normal; the patient is nursing the twins and is in the best of health. Professor Bossi is of the opinion that he owes this success solely to the extract of the suprarenal glands.

Shortly thereafter another case of osteomalacia, in the sixth month of pregnancy, was received at the clinic. She was scarcely able to stand, and all attempts to move and walk produced great pain. The pelvis exhibited markedly the osteomalacial deformities, so that the distance between the tuberosities measured 4 centimeters. After the adrenalin treatment was resorted to (in this case injections of about 1 Cc. of a one-percent solution of adrenalin chloride were made) there was immediate improvement, and in twelve days the patient was free from pain and began to walk about. The treatment was continued.

In consequence of experiments on animals (sheep), which he made to complete his observations at the sick bed, Bossi is inclined to believe that there is a connection between the removal of the suprarenal glands and the etiology of osteomalacia.

THE TREATMENT OF GASTRIC ULCER.

In the *Dublin Journal of the Medical Sciences* for March, 1907, LITTLE reminds us that the three events which gravely compromise the safety of the patient who suffers from gastric ulcer are persistent vomiting, hemorrhage, and perforation. The terms of the discussion forbid the consideration of the last, and therefore the author devotes the remainder of his article to the other two.

Persistent sickness and vomiting are occasionally difficult to control. Looking back on the cases he has seen, the author would say the first thing is generally to try for twenty-four hours to nourish the patient entirely by rectal feeding; but this does not always succeed, and, indeed, he has not the faith in rectal feeding which is entertained by some. Absolute abstinence from milk is, he thinks, the most important advice. He has seen intractable vomiting cease when milk was given up.

The next thing which all the nurses who have worked with the author have been taught to do, not only in the vomiting of gastric ulcer, but in urgent sickness arising under other conditions, is to give half a teaspoonful of bicarbonate of sodium in half a tumbler of water, as hot as is comfortable, to the patient; if the first draught of this kind is thrown up he gives it again, and if this fails he tries another remedy.

Essence of chicken in teaspoonful doses often stops vomiting; a pill containing one-sixth of a grain of cocaine is sometimes successful; five minims of tincture of nux vomica, or a teaspoonful of granular citrated caffeine in a claretglassful of water, or a morsel of stale bread washed down by a wineglassful of champagne, are all remedies with which the author has had actual and favorable experience. If the patient is not only sick, but restless and sleepless, he has given one-sixth of a grain of sulphate of morphine with one two-hundredth of a grain of sulphate of atropine hypodermically, and he does not remember any case in which the morphine subsequently caused its own peculiar nausea.

Of some remedies frequently used, such as ice, creosote, and prussic acid, the author has no favorable experience.

In the beginning of his communication the author states that he has never seen a death in gastric ulcer due to hemorrhage, and therefore thinks that such remedies as surgical interference for hematemesis can

seldom be required. What he has observed to be most useful was either a hypodermic of morphine and atropine or the introduction of a quarter of a grain of morphine into the rectum. The use of morphine after a severe hemorrhage, however, he thinks, requires caution (many years ago he saw a case in which death seemed immediately due to a not very large injection of morphine in a patient who had vomited a great quantity of blood, owing to cirrhosis of the liver), just as the use of morphine and of hyoscine requires more than usual caution when a patient, from any cause, has had very little food. The morphine, absolute quiet, and rectal feeding have been the means he has for many years employed, and since he saw the value of adrenalin in the hands of his surgical colleagues he has always given twenty minims of Parke, Davis & Co.'s chloride of adrenalin in a teaspoonful of cold water. It seems to him useful. Another remedy in which he still retains some faith is turpentine; ten or twenty minims may be given in capsule.

With regard to the administration of ice and the injection of ergotin, the author cannot conceive of their doing anything but harm.

ON THE USE OF CALCIUM SALTS AS CARDIAC TONICS IN PNEUMONIA AND HEART DISEASE.

Sir LAUDER BRUNTON in the *British Medical Journal* of March 16, 1907, writes that fifteen years ago, in the *British Medical Journal* of January 23, 1892, he published a paper on the use of oxygen and strychnine in pneumonia. This paper was hurriedly put together, half of it having been written in a country house while watching a case of pneumonia, and the other half scribbled in a railway train on Dr. Brunton's way back. The reason for the hurried publication was the prevalence of pneumonia at the time, and the hope that the treatment which they found so promising might prove useful in the hands of others. The event has justified their expectation, and the treatment of pneumonia by oxygen and strychnine is now widely and successfully employed. A similar reason induces Brunton to write this short paper on the use of calcium salts, because in the present epidemic of postinfluenzal pneumonia there seems to be a great tendency to cardiac failure, and this, he thinks, may to some extent be averted by the free use of calcium salts, which have a tonic action upon the heart.

Nearly twenty-five years ago Dr. Sydney Ringer discovered that when the frog's heart is perfused with a solution of sodium chloride in distilled water the heart soon loses its power of contraction. This result does not occur if the solution is made with tap water. Professor Ringer's scientific acumen soon led him to the important discovery that the maintenance of the contractibility of the heart when tap water is used is due to the calcium salts contained in the water. This discovery is constantly utilized in physiological laboratories, but, so far as is known, has not had any practical application in medical treatment.

A good many months ago Dr. Brunton was called to see a case of pneumonia, and, fearing that the heart would fail, he thought over all the remedies which were likely to avert such an unfortunate result. It then occurred to him that calcium chloride ought to be useful. The only harm it was likely to do was to increase the coagulability of the blood, but any risk of this sort was small in comparison to that from cardiac failure, so he prescribed it. It is not so easy to judge of the usefulness of calcium salts in threatened cardiac failure as it is of the action of oxygen and strychnine, because the results are not so immediately apparent. As the patient for whom he prescribed the calcium made a good recovery he was encouraged to give it again, and has done so in a considerable number of cases. In some of them a fatal result has ensued in spite of everything that could be done, but in a number of them the effects appear so encouraging as to deserve a wider trial for the medicine. He usually gives it in 5- to 10-grain doses every four hours, simply dissolved

in water. As it is very deliquescent it can only be kept in solution. It has a very disagreeable saline taste, but this is well covered by saccharin; one minim of the elixir of saccharin, containing one-twentieth of a grain of saccharin, is sufficient to cover the taste of 10 grains of calcium chloride. This mixture may be given either in water or in milk, and it does not interfere with the use of any other remedies.

Brunton has also used it in cardiac disease, where the ventricular wall appeared to be losing power, and here also the results have been encouraging. In cases of pneumonia, in which one wishes to get rapid action, he thinks the chloride is the best salt of calcium, but in cardiac disease other salts may be employed, such as the lactophosphate or the glycerophosphate. It is quite possible that the great benefit one frequently observes from a milk diet in cases of heart disease may be due, in part at least, to the large quantity of calcium salts which the milk contains.

At the present moment, when there is a good deal of antivivisection agitation, it may be interesting to note that the plan of treatment by oxygen and strychnine recommended by Dr. Prickett and Dr. Brunton fifteen years ago, and the one which Brunton now recommends, both owe their origin to laboratory experiments, and any benefits which may result to patients from either plan must be regarded as the fruits of experiments upon animals.

THE RECENT TREATMENT OF HAY-FEVER.

CURTIS in an article in the *Journal of the American Medical Association* of July 13, 1907, says that a careful study of the facts at his disposal leads him to the following conclusions:

1. Hay-fever is a disorder amenable to no specific treatment.

2. The number of cases of hyperesthetic rhinitis from other causes than ragweed and other pollens is about one-third of the total number.

3. About one-third of the cases supposed to be due to pollen reaction may be relieved by constitutional and surgical methods of treatment. Predisposition to attack in these cases being due to definite causes, the author suggests the theory that induced enervation of the sympathetic is an important etiologic factor.

4. Primary intoxications may take place from pollen toxins in cases in which the sympathetic system apparently is not previously enervated. These cases, theoretically, should react to antitoxin treatment.

5. The consensus of opinion to-day is against the claims made for pollantin, though observers who have been instructed personally by Professor Dunbar indorse unqualifiedly the great benefit to be derived from the treatment.

6. Medically the suprarenal capsule products hold the first place to-day in the treatment of hyperesthetic rhinitis.

7. The constitutional treatment as an adjunct to any local application is of supreme importance.

8. The best of all treatments yet found is the climatic, with previous attention to nasal conditions.

THE TREATMENT OF MALARIA.

KRAUSS, in the *Journal of the American Medical Association* of March 16, 1907, considers the therapy of this infection only in so far as it has a bearing on the eradication of the endemic. If such a patient is put to bed and placed under the best hygienic conditions, given eliminatives, followed by arsenic, and the malarial leucocyte variation disappears, he may be considered as cured. If hemamebæ appear in the peripheral circulation during this time, tentative doses of quinine may be given to try the hemolytic reaction, and then larger doses until a cure is effected. The time to give quinine, and the only time, is when developing parasites are found in the peripheral blood, provided, further, that the infection is fresh, as evidenced by a characteristic fever curve; otherwise a preliminary purge is absolutely demanded. It is not necessary to salivate your patients

or to give calomel to all of them. In the autumn it is the author's routine practice, so far as he employs routine, to give two or three 10- or 15-gramme doses of sodium thiosulphate at desirable intervals until the bowels are freely emptied. Pernicious cases must, of course, be treated more expeditiously, and if acute perniciousness supervenes on chronicity, it is better to take chances with intravenous medication; there is slight probability of the patient recovering in any event.

If acute paroxysmal malarias are properly handled with a persistent follow-up treatment, such a condition cannot develop, and the most prolific source of the season's infection is definitely eradicated. The prophylaxis of malaria and its definite local eradication depend alone on the complete cure of our malarial fevers. The small percentage of natives who do not have paroxysms or distinct evidences of the infection should have their blood examined occasionally. Two objections are urged against this plan: (1) The patient will object on the ground of expense and impracticability; (2) there are few skilled microscopists in the country.

As an economical proposition, bearing in mind that each malarial paroxysm adds to the sum of pathologic changes, more or less permanent, and that many disorders, progressively fatal, are mistaken in the beginning as "just a touch of malaria," is it cheaper to spend weeks and months vainly trying to regain health, or to have oneself looked over from time to time?

As to the second objection, thirty years ago it would have been regarded as the height of extravagance for a business house to employ a stenographer; to-day it is a small concern that does not require a number of them; to-day there are laparotomists in the country, telephones, electric light, water-works, and trolley cars, and as soon as practitioners learn to appreciate the necessity for skilled microscopists they will have them also. Almost every patient with malaria in the writer's charity service during the last quarter (July to October, 1906) had his blood examined before the treatment was begun; the temporary illness of an assistant is the only excuse for the "almost." One death occurred in this service —a man brought in comatose, who died within two hours. In looking over the annual reports of a local hospital the author finds this classification: Various forms of malaria, 857 cases, 15 deaths. The following is but little better:

	Cases.		Cases.
Estivo-autumnal	95	Pernicious	6
Intermittent	24	Toxemia	4
Remittent	21	Tertian	264

In this list some visiting physicians made an attempt to classify their fevers properly, and the others did haphazard guesswork. Among these the writer found, at random, two cases of the quartan type, one being associated with the estivo-autumnal type. Here there were 16 deaths.

If it is borne in mind that of all fevers, malarial is the most tractable, what excuse have we to offer for a hospital death-rate of from 2 to 6 per cent? And if we bear in mind that the disease is absolutely preventable, how can we complacently look on a ratio of 11 per cent to the total number of deaths?

The writer holds that such a state of affairs is absolutely unjustifiable, but the worst is yet to come. It is safe to assert that not one of these patients has been instructed in the matter of his responsibility to his fellow man in respect to harboring malarial organisms.

Krauss concludes as follows:

1. There is not the shadow of an excuse for failure to make an exact diagnosis in all fever cases.

2. The blood of residents of malarious localities should be examined at frequent intervals. This does not constitute an encroachment on personal liberty that can weigh a feather's weight as compared with vaccination.

3. Fever cases should be treated in accordance with the findings of a thorough blood examination, with especial reference to time of dosage, and to the complete immunization of the individual for the sake of his neighbors.

4. Quinine judiciously used in accord-

ance with the findings of a blood examination very rarely does harm; its prohibition on the ground of possibly precipitating a hemoglobinuria is unpardonable; its administration during hemoglobinuria is very dangerous and usually unnecessary; a blood examination will save such patients from almost certain death.

5. The screening of houses and the destruction of breeding places of anopheles should be encouraged so far as possible, but the prophylaxis of malaria and its definite local eradication depend on the destruction of the parasite within its alternative host, man.

THE PASSAGE OF METHYLENE BLUE FROM THE MATERNAL TO THE FETAL CIRCULATION.

In the *Journal of the American Medical Association* of March 16, 1907, CORRIGAN says that failure to find record of any similar observation in the study of placento-maternal circulation would seem sufficient reason for submitting the following:

A woman, three months' pregnant, suffering from a chronic cystitis, was given a capsule of a methylene blue compound. As the medicine produced almost complete relief of her symptoms, the patient continued taking it up to the time of her delivery, at full term. The average dose given her was three grains of the methylene blue daily. At delivery the baby, an unusually vigorous child, attracted no special attention, but when the nurse was removing the first diaper she noticed a blue stain on the cotton; each subsequent change of diaper during the first eighty hours after birth gave evidence of methylene blue in the infant's urine, the color gradually disappearing. Nothing else unusual was found in the baby's condition. It was noticed that the liquor amnii showed no unusual color; careful inspection of the sheets and pads used during labor failed to show any trace of color from methylene blue.

From these observations the author ventures to assert:

1. Methylene blue passes from the circulation of the mother to that of the fetus.

2. Either the amount thus passing is an exceedingly small portion of the drug absorbed by the mother or the drug passes from mother to child, and *vice versa*.

During six months the mother received into her stomach about nine drachms of methylene blue, while an estimate based roughly on the amount of colored urine passed by the infant would place the quantity of the drug in the child's body at time of birth not above one grain.

3. There being no evidence of methylene blue in the liquor amnii the fetus does not evacuate the bladder, and the liquor amnii accordingly is in no degree composed of fetal urine.

4. The kidneys of the child *in utero* do not secrete urine beyond that found in the bladder at the time of delivery, or if they do secrete urine beyond this amount, they do not excrete methylene blue, which may be in the fetal circulation.

The first evacuation of the bladder in this case, occurring very shortly after birth, produced the characteristic stain. So it would seem that the kidneys not only secreted urine but also secreted methylene blue, while the child was still *in utero*, but not more than that contained in the bladder at the time of delivery.

THE USE OF ANTIPYRIN AS A SEDATIVE IN SOME OF THE COMMON DISORDERS OF INFANCY AND CHILDHOOD.

In a paper bearing this title in the *Practitioner* for April, 1907, FLETCHER in speaking of an epidemic of whooping-cough tells us that various sedative drugs, such as belladonna, potassium bromide, chloral, antipyrin, etc., were tried in conjunction with an expectorant mixture. The usual experience was met with, viz., that one drug would often influence a case in which the others almost entirely failed. But of all the drugs tried, undoubtedly the most serviceable was antipyrin.

In no case could it be said to have cut short the disease, but it usually influenced the paroxysms of coughing and the vomiting following them in a marked manner. For the latter, in the present epidemic, at

any rate, it was practically a specific. It seldom failed after two or three doses to stop the vomiting, and that even in cases in which it did not appear to influence the paroxysms themselves. In most instances, however, the paroxysms were considerably modified. After several doses of 1 or 2 grains, given every four to six hours, the frequency would diminish to half or even less. By doubling the dose at bedtime, a comparatively quiet night's rest was often obtained. As a result it was, in many cases, easier to maintain the nutrition of the little patient, his strength was conserved, sleep was uninterrupted, and we may reasonably infer that the damage to the lung tissue was slighter. The dose usually found efficient has been from 1 to 3 grains, four to six times daily, according to the age of the child and the severity of the attack.

The beneficial action of antipyrin as a sedative is well exemplified in its effect on the nervous irritability which frequently accompanies teething. Although many of the ailments which occur during the first dentition, and which are frequently ascribed to it, are in reality due to entirely different causes, such as improper feeding, rickets, etc., yet there remains a proportion of cases, characterized by nervous irritability, pain, sleeplessness, and the like, which, if not actually due to the cutting of the teeth, are at least intimately associated with it. And it is here that antipyrin, given in doses of 1 to 2 grains two or three times daily, produces such good results. The occurrence of a certain number of cases in which the eruption of each new tooth, or set of teeth, is accompanied definitely and regularly by vomiting, diarrhea or cough, and occasionally eczema, suggests that teething may be the predisposing cause. Its action may be reflex, or may determine for the time such nervous instability that slight irritation in the respiratory tract, or in the alimentary canal, will produce effects quite out of proportion to its magnitude. In several such cases the symptoms have been checked by the employment of antipyrin alone; in others it must be confessed that it has had little effect, probably owing to the fact that the cause lay elsewhere. This heightened irritability of dentition occurs especially in children of a nervous diathesis. It is also characteristic of rickets, and although the nervous symptoms occurring during the dentition of a rachitic child should first of all be treated on antirachitic lines, yet they will be more rapidly and effectively alleviated by small doses of antipyrin.

In three cases of night terrors in which antipyrin was used, the results were so striking that they were worthy of record.

THE SURGICAL TREATMENT OF NEPHRITIDES.

If we are to accept Pousson's teachings, the advantages of the surgical treatment of acute and chronic nephritis must be evident to any one conversant with the physiology and pathology of the kidney. Surgical treatment is indicated both in acute and chronic nephritis, but for different reasons the advantages offered by operation in each condition should be examined. In acute nephritis it would appear that nephrotomy realizes three fundamental indications for its cure, namely, drainage, removal of congestion, and sepsis. It certainly must be admitted that congestion is the initial stage of all nephritides, and by splitting the kidney the organ can be bled to any extent, while by the use of the drainage tubes it may be rendered aseptic, and in reality this drainage is practically ideal. If the question is raised as to what we render aseptic and what we drain in a tissue having no tendency to suppurate, as is the case in all forms of medical nephritis, it at once becomes evident that the above propositions do not hold good.

Another objection which may be raised is that acute nephritis usually involves both glands; consequently it would seem only logical to do a nephrotomy on each, and this very point shows to what extent we are ignorant in renal pathology. However, as time goes on surgeons have practically shown that acute unilateral nephritis certainly exists and perhaps to a considerable

extent, so much so that Weir found it in 17 per cent of his cases. Then, again, Lennander believes that a unilateral nephritis is much more frequent than has heretofore been thought, and certainly no one can refute this claim. Consequently, it appears evident that frequently only one kidney is involved in the process.

The next question which arises is how to diagnose a unilateral nephritis, and here a modern diagnostic triumph comes forward, namely, cystoscopy, segregation of the urine, and catheterization of the ureters. Then, again, it should be recalled that the diseased kidney is frequently spontaneously painful and also increased in size. But now when both kidneys are the seat of acute nephritis a bilateral nephrotomy may be undertaken, or if one is not sufficiently surgically inclined, nephrotomy on one organ may be done, and according to many writers one will have had the satisfaction to have fulfilled the three fundamental indications of modern surgery, while a supposed reno-renal reflex will attend to the rest. Now all this gives a mortality of about 44 per cent, but it should be pointed out that in the large majority of cases reported so far the patients were in a desperate condition at the time operation was undertaken, and if they had been operated on earlier their lives might have been saved, or at least more successful outcomes would have been certain to have occurred.

Referring now to the surgical treatment of chronic nephritides, the author particularly considers decapsulation as advised and practiced by Edebohls and others. In chronic nephritis the renal lesion is definite, usually sclerosis has invaded the intertubular and interglomerular spaces, while the important structures of the organ are compressed and sclerotic, at least as far as the glomerulæ are concerned. The only resource offered by therapeutics is a diet allowing sufficient nourishment for the organism and a thorough washing out of the urinary apparatus, but it may be said that chronic nephritis is incurable medically.

Some surgeons at the present uphold the view that chronic nephritis can be radically cured by nephrotomy, or better still, by renal decapsulation. If the kidney continues its atrophic process the reason is that its retracting capsule compresses it too tightly, and if the latter be incised and freed from the renal structures the kidney will return to its normal condition. They also uphold the view that the poor irrigation of the kidneys is due to the capsule compressing the arteries, and if the former be incised not only will the arteries again take on their normal caliber, but a new vascular formation will take place in the kidney, so that irrigation of the organ will be complete.

As may be seen, physiologic pathology is fulfilled by this means, but there are certain objections. In point of fact, who has ever seen a profoundly sclerotic tissue return to a normal morphology? We believe that no one has. Then, again, who has seen a neovascularization develop in a kidney after decapsulation? Tuffier, who thought that this neovascularization might be expected when he was making attempts at renal graft, on the contrary found that there was less vascularization in the newly formed perirenal cicatricial tissue than in the primarily sclerosed capsule, while Claude, in repeating the same experiments, came to the same conclusion.

Now, leaving aside all these *a priori* considerations, if we simply examine the operative results our last illusions will be destroyed. In the first place those cases of renal decapsulation which have been reported are incomplete, and one is obliged to take the word of the writer when a successful outcome is announced. It goes without saying that the good faith of the writer cannot be incriminated, but how can one judge of the seriousness of the cases which they have operated on? There is nothing more difficult than to formulate the prognosis in a case of Bright's disease and say that such and such a patient will live such and such a time; to make such an affirmation the case must have been studied for a long time. Edebohls states that he has had a mortality of 17 per cent, but here again the cases have been given altogether and more detail is necessary.

Not long ago Pippel advised decapsulation in cases of eclampsia. It is quite true that this writer has shown no conclusive fact upon which to uphold his views, for he simply bases his conclusions on pathologic findings, believing that an examination of kidneys in a laboratory is sufficient to justify his proposition. However, let it be said that still more recently Pousson and Chambrelent have recorded a successful case of operation by nephrotomy in eclampsia.

Evidently one should be skeptical in the case of *a priori* criticisms. However, there is enough evidence at present which tends to show that in properly selected cases benefit may be derived from surgical interference in cases of chronic Bright's disease.—*American Journal of Urology,* March, 1907.

CLINICAL OBSERVATIONS AND EXPERIENCES IN THE TREATMENT OF LOBAR PNEUMONIA.

AFFLECK in the *Scottish Medical and Surgical Journal* for April, 1907, points out that dyspnea in pneumonia is connected with a variety of causes—a toxic action upon the respiratory center, the pain, the extent of lung involved, the condition of the other lung, and in a very special manner the state of the heart. In its most serious form it is apt to occur far on in the case, when cyanosis or duskiness makes its appearance. If accompanied with coarse, moist râles, with little cough and no expectoration, it is certainly of evil omen, and treatment is but too often of little avail. Diffusible stimuli, such as compound spirit of ether with aromatic spirit of ammonia, may give some relief. It is in such circumstances that oxygen inhalation is often resorted to; and this remedy, when first introduced for this purpose, seemed to give promise of great usefulness. More extended experience, however, has apparently lessened confidence in its efficacy, and it cannot be said to occupy the high place in the therapeutics of pneumonia that it once did. The author's experience of its use has not been small, and upon the whole the results have been disappointing, notwithstanding that in some notable instances it acted beneficially. It is in consequence of such occasional successes that one feels constrained to give it a trial in the more serious cases of pneumonia. It is never to be forgotten that an ample supply and renewal of fresh air in the room is most essential, and is best secured by an open window.

Treatment directed to the heart must ever hold a prominent place. Such treatment is generally reserved for that period in the progress of a case in which there is a lowering of blood-pressure and a pulse which shows evidences of feebleness, dicrotism, or irregularity. Digitalis, strophanthus, strychnine, and alcohol are the remedies usually employed to combat this condition. The author has found the two most potent to be digitalis and strychnine. The former may be given pretty freely if the effect is watched, but it is doubtful whether the large doses (a drachm of the tincture) some have recommended are really of much service. Strychnine is most efficacious when administered hypodermically. It is a question whether the tendency is not to the too frequent repetition of these strong drugs, particularly when the case is assuming serious characters, and whether more harm may not be produced than good.

The question of alcohol in pneumonia has been a much debated one. There can be little doubt that the same value does not now attach to its use as a heart supporter in this disease as it once did. Indeed, many now believe that it is unnecessary in most cases, and that even where it appears to be indicated, as in the case of the aged and feeble, its employment in any but small amount may be hurtful. While far from denying it a place in the therapeutics of pneumonia, the author holds to the view now expressed, and he believes it to be inferior in value to strychnine for the heart. This latter agent he has sometimes thought might often be administered earlier in the course of the disease with advantage, and he has occasionally begun its use whenever the case came under observation, with good effect.

The treatment of insomnia is often at-

tended with difficulty and disappointment, a remedy which succeeded in one case, hopelessly failing in another. Paraldehyde in full doses given by the mouth or rectum succeeds with a good many, and in alcoholic cases is one of the best hypnotics. Chloral along with digitalis he has known to answer particularly well. Sulphonal, trional, and veronal occasionally succeed, but are less trustworthy, and the same may be said of the bromides and also of alcohol. Opium in any form or any dose he rather shrinks from administering in the advancing or advanced stage of a pneumonia, having seen on more than one occasion reason to regret its having been used.

Delirium, if of moderate amount, can often be controlled by some of those remedies suitable for insomnia. But in the more active forms other measures have to be resorted to. The application of an ice-bag to the head, when tolerated, may be of service. In cases showing great excitement the author has used hyoscine with success so far as calming the patient was concerned; but, as already stated, such cases are very often fatal.

The pyrexia of pneumonia does not often call for special treatment. When the temperature runs high much comfort may be afforded by sponging such parts of the body as can be readily gained access to with tepid or cold water. The temperature may be lowered a little in this way, and the procedure is by no means unpleasant to the feverish patient. Antipyretic drugs are not advisable from their heart-depressing tendency. Even quinine may produce a considerable amount of cardiac disturbance.

CHLORETONE AND ITS USES, ESPECIALLY IN CHOREA.

WYNTER writes under this title in the *Lancet* of March 30, 1907. He states that on account of its local anesthetic effect he was prompted to employ this drug in painful and irritable conditions of the stomach, such as gastritis, cancer, gastrodynia, ulcer, and especially in those cases of pain, vomiting, and hematemesis so frequently associated with chlorosis, and scarcely yet completely removed from the category of gastric ulcer, with which they are by no means identical. In doses of five grains or more in petroleum emulsion it has a remarkably soothing effect both on pain and vomiting, and exercises a deterring influence on fermentation, resembling in this carbolic acid. It was while using chloretone for this purpose that its hypnotic effect became apparent, and the author has since employed it in ten-grain doses simply to procure sleep, though the state of quietude induced by the smaller doses is itself a very great alleviation of painful and protracted illness, such as the gastric conditions to which reference has just been made.

The local anesthetic effects have been found of value in vaginal pruritus as exercised by a 0.4-per-cent solution in warm water, or by five-grain suppositories in hemorrhoids. The sedative effect on the brain, similar to that of the bromides but more rapidly induced, associated as it is with a similar effect on the stomach, led to its early employment for seasickness, and it is in connection with this distressing malady that its reputation has chiefly been established. Five grains in powder taken a quarter of an hour before embarking will generally insure complete immunity from sickness during the Channel passage, even in rough weather, and the drug does not appear to lose its efficacy by repetition, as is the case with some others. A young French lady, who was invariably ill during the crossing to Dieppe, since being fortified with chloretone has only once suffered, and that in a way which suggests a useful hint in prescribing. Having performed the outward journey *tute, cito et jucunde* under the influence of one of the five-grain powders, of which she was provided with four, the other three were carefully deposited in a purse against her return after the summer holiday. Then accompanied by a friend, to whom she promised immunity from the discomforts of the sea on the strength of this new remedy, she confidently embarked and proceeded to share the remaining doses. One paper after another

was opened, but all were empty. In the hot weather the chloretone had evaporated and vanished, leaving nothing behind but disappointment and the prospect of a miserable voyage, which was amply verified in both cases. As negative evidence this was distinctive testimony to the value of the drug, and has been subsequently remedied by enclosing it in impervious wrappers such as paraffin paper.

When taken at intervals in similar doses longer voyages have been undertaken without discomfort—such, for instance, as that across the Atlantic. The drug was taken about twenty minutes before meals two or three times a day during rough weather, and the journey was completed without a qualm. A more general knowledge of this remedy will certainly save a large amount of discomfort, and in those who suffer continuously will enable journeys to be undertaken which were formerly dangerous or actually impossible.

The author has dwelt upon these effects of chloretone as they have led up to its employment in another class of cases for which we have hitherto possessed no effectual remedy. He refers to chorea. During the past twelve months the opportunity has occurred of exhibiting the drug in some 14 cases, and the result has been so striking and uniform that though the number is small it is worth making known that those who have wider opportunities may further test its reliability. In these cases, both boys and girls between the ages of seven and twelve years, five grains of chloretone in half an ounce of petroleum emulsion was given three times a day for two and sometimes three days; there was in all of them such a marked diminution of the choreic movements that the dose was then halved and sometimes given only twice and even once a day, according to the severity and progress of the case. The number of days in which the drug was continued varied from five to ten, by which time it was omitted, and either steel wine with arsenic or cod-liver oil was substituted to meet the anemia and feebleness which usually accompanied the disease. Under this treatment the duration of choreic movements was limited to nine days, and the stay in hospital to three weeks on an average. This is a great advance in the treatment of chorea, which even with the advantage of hospital régime usually extended to double and treble that time. These advantages consist of rest in bed, with isolation and liberal dietary. When convalescing the patients were encouraged to knit or crochet, or to use the hands in some such manner, so as to practice purposive movements and also as a test of steadiness.

Many patients on admission were unable to feed themselves, experienced considerable difficulty in speech, and in some cases needed padding in their cots to prevent bruising in their uncontrolled movements. It was found that those cases which came under treatment early benefited most. Of the 14 which took chloretone, two were removed from the hospital before they were quite recovered on account of contracting rötheln, and two others resisted the treatment for a longer time—a girl aged ten years, who had suffered from chorea for three years with short remissions, and another girl aged seven years, who after four months' chorea before admission appeared rather to be cured by the relief of constipation, which had been a marked feature, this being effected in twenty-one days.

With any comparatively new drug exerting marked beneficial effects the question always arises as to drawbacks, and in the present instance there are some, though not of serious account. Two of the cases exhibited exfoliation of the skin on the hands and heels which gave rise to a suspicion of scarlet fever—one after ten days in hospital without fever or rash, and the other shortly after removal on account of rötheln, of which there had been an outbreak in the hospital. The other 12 cases did not show this, and the retention of one such case in the hospital and subsequent removal to the convalescent home did not lead to communication of scarlet fever to any one else, so this exfoliation of the skin may be regarded as an occasional effect of the drug.

In two of the earlier cases treated, possibly owing to the physiological effect of

chloretone being carried rather too far, there was marked somnolence, the child lying in any attitude in which he was placed and rousing only to take food. This passed off in a few hours on discontinuing the drug.

As regards the permanency of the cure further experience is required; one of the cases cited was readmitted in about three months with a relapse, and on the other hand another was successfully treated which had relapsed after treatment by arsenic. Like the treatment of rheumatism by salicylates, the effect of the specific drug requires to be followed by a tonic régime in most cases, since the little patients are usually anemic and feeble in addition to suffering from the spasmodic movements. Where endocarditis coexists salicylates can be combined with the chloretone or may be applied to the skin instead, but for the chorea itself chloretone appears to be as much a specific as the salicylates have come to be regarded in rheumatism.

THE TREATMENT OF RICKETS.

SUTHERLAND says in the *Clinical Journal* of March 13, 1907, with regard to medical treatment, that he must speak first of all about cleansing the alimentary canal in the treatment of rickets. The intestinal tone is not normal, and it is of advantage, he thinks, to give a tonic. One can give a couple of minims of tincture of nux vomica, five minims of tincture of rhubarb, and three or four grains of sulphocarbolate of soda. These help to keep up the healthy action of the bowels. The great drug which we depend upon is cod-liver oil. Other drugs have been tried, such as mineral and vegetable oils, but they do not seem to have the same beneficial effect which one obtains from animal oil. Certainly cod-liver oil takes the first place.

Some children of nine to twelve months old will take plain cod-liver oil, half a drachm to one drachm three times a day. In others, however, the palate is more particular, and they prefer a mixture of cod-liver oil and malt, equal parts. Medicinally, the author thinks the best preparation in these cases is an emulsion of cod-liver oil and hypophosphites. He recommends half a drachm of cod-liver oil and half a grain each of hypophosphite of lime and hypophosphite of soda, which can be flavored with oil of cassia, one-tenth minim, and made up with glycerin and tragacanth to one drachm. One starts with this, and increases the dose according to the powers of digestion. It should be kept up for some time. That is the important point—the treatment must be kept up for a considerable length of time. We are not dealing with an acute affection, but with a particularly chronic one.

There are the special rickety complications. As already stated, the whole brunt of the disease seems sometimes to fall upon one system more especially. The first system the author refers to is the respiratory. Rachitic children are especially liable to bronchitis. If it is acute bronchitis, of course that must be treated in the ordinary way for a time, until the acute stage is over. One wants to find out what is the cause of the bronchitis. In rachitic children there is a marked tendency to hypertrophy of the adenoid tissue in the nasopharynx, and we must look out for that and correct it if necessary, because as long as there is blocking of the upper respiratory passages the tendency to bronchitis will be perpetuated. We must also pay special attention to the surroundings from the point of view of hygiene, and see that the child is not living in hot, stuffy rooms. Another factor is the question of adiposity. If we find that the rachitic infant is extremely fat, then in that condition of fatness will be found a cause for the bronchitis. We can understand what an impediment to the circulation through the capillaries the presence of a large amount of fatty tissue is, and how the blood is driven with great difficulty through the oily tissue. As the result of this there tends to be more or less congestion of the lungs, and a stagnation of the circulation in the lungs follows, so that pulmonary catarrh is easily established. In the treatment of rachitic infants with bron-

chitis, if the child is very fat we must get the excess of fatty tissue reduced. In such a case the diet must be extremely spare until the weight of the child has been reduced.

It is after the acute attack is over, and in cases of chronic bronchitis, that it is so important to recognize the underlying condition of rickets, because we can never cure such cases by ipecacuanha and squills and carbonate of ammonia, whereas if we put the child upon an antirachitic diet, including a full amount of fatty material, we will find that the bronchitis will be permanently cured.

Another affection to which these children are liable is bronchopneumonia. In the acute stage of that affection the child must be treated on ordinary lines. After the acute stage is over, if we find underlying rickets the patient should be put upon antirachitic treatment, and we will often find that the lungs will improve more markedly under that than under any drug treatment.

Next, with regard to the intestinal canal, the chief rachitic manifestation is diarrhea, which is especially common in summer. The immediate cause may be some overfeeding, or a chill, or teething. An attack of diarrhea comes on, and we must treat that upon general lines with simple diet. After the acuteness of the attack has passed off we must not keep on with astringents —bismuth and tannic acid and alum—but put the patient on cod-liver oil and the fatty diet, and we will find that we get better results by that treatment than by keeping the child on what one may describe as the ordinary treatment for diarrhea.

With regard to nervous affections, one of the leading characteristics of rickets is the tendency to nervous instability, which does not manifest itself by any persistent organic disease, but by a series of disturbances which are apt to be intermittent and prolonged. The chief ones are convulsions, laryngismus stridulus, and tetany. With regard to convulsions, that is a condition which one should always associate in infants with the rachitic condition—that is to say, if a child between the ages of nine months and two years has convulsions we must always bear in mind the possibility that rickets is the condition in the background. The immediate treatment of convulsions is the same, whatever the cause, namely, removal of the irritation by giving sedatives for the time being. But the point in connection with rickets is that we are not going to get permanent relief by the use of sedative treatment; the patient requires to employ antirachitic treatment.

Laryngismus stridulus is not only an accompaniment of rickets, it is a special affection of rickets. In other words, if a child has an attack of laryngismus we may be fairly certain that rickets is at the back of it. One very often finds that the spasm which is present will be relieved by giving the child plenty of fresh air. The condition is more apt to come on in hot, stuffy rooms than in a room into which the air is entering freely, and which is therefore fresh and cool. We give relief by castor oil to begin with, combined with bromide of ammonium. Locally we can employ counter-irritation by means of a sponge to the front of the neck, and put the child into a hot bath. Having reduced the acute stage by means of sedative treatment, we do not expect to get permanent relief except by antirachitic treatment. When an acute spasm comes on at night that is a condition not without danger, and it must be treated actively. But the spasm in some cases may be essentially chronic; it may come on only under excitement, or when the child is crying, and at other times there is no sign of it. In those cases, to go on giving bromide and that sort of thing does not lead to permanent cure. But if we give the child plenty of fatty food and plenty of fresh air we find it will readily pass off.

BUTTERMILK AS AN INFANT FOOD.

In the *Medical Record* of March 30, 1907, STRAUCH writes an exhaustive paper on this subject, which is of particular interest, because within a short time this method of feeding healthy infants, and especially those afflicted with gastrointestinal disturbances,

has found its way into numerous clinics and polyclinics of Germany. Authorities like Baginsky, Heubner, Caro, Soltmann, Escherich, Salge, and others have recorded very favorable results. Also in France, Roumania, Greece, and South America buttermilk has recently been tried as an infant food with equally encouraging results.

As the term buttermilk is employed to designate various dairy products, it is necessary to confine this term exclusively to churned milk, which may be made by the following methods: (1) Sweet cream, the product of centrifugation, or of milk that has simply stood for hours in a cool place, is churned, whereby the milk-fat globules, after the disruption of their haptogen membrane, form the butter. This buttermilk is almost identical with sweet, skimmed milk. (2) Since a slight acidity of the milk renders the churning more profitable, milk, or cream, is used which has soured by spontaneous fermentation, or after inoculation with sour milk, or with pure cultures of bacillus acidi lactici. The degree of acidity nearly corresponds to the neutralizing capacity of 5 to 7 Cc. of normal NaOH solution per 100 grammes of milk. This buttermilk differs from the aforementioned one by its acidity (due mostly to lactic acid), and by the fact that the casein is coagulated and suspended in the serum in very minute particles.

While the physical, chemical, and biological differences between cow's and human milk correspond to those between a calf's and an infant's stomach, sour buttermilk deviates still more from human milk. The former shows an acid reaction, the latter an amphoteric or slightly alkaline reaction to litmus paper. Human milk is abundant in fat, scanty in albumin, and coagulable by rennet. Buttermilk is scanty in fat, abundant in albumin, the casein is separated from the lime, and therefore coagulated, and incapable of further coagulation by rennet. In human milk the calcium salts are mostly suspended as insoluble phosphates; in sour buttermilk we find the calcium partly united with lactic acid; the insoluble di- and tri-calcium phosphates are converted into soluble mono-calcium phosphates. Human milk is almost sterile; buttermilk in its unboiled state abounds in bacteria, in saccharomyces species, and the products of their metabolism.

These great differences justified the skepticism and reserve in regard to the use of buttermilk in infant feeding until experiments and very favorable experiences removed every doubt as to its great usefulness in certain conditions. Buttermilk, in fact, has been proven to be one of the best dietetic remedies for gastrointestinal diseases of children, according to the medical literature of Germany. Sour buttermilk, however, is not to be administered in its raw primary state, but modified more or less in accordance to Teixeira's formula in the following manner: One liter (quart) of fresh buttermilk is mixed with one or two tablespoonfuls of rice—or wheat—flour, the milk being added gradually at the beginning, to prevent the formation of lumps. While being constantly stirred, it is heated slowly for fifteen to twenty minutes to the boiling point, and finally, after adding 50 to 70 grammes of sugar, it is cooled and hermetically bottled. The addition of sugar makes up for the lack of fat and the resulting deficiency in calories, and so does the flour, which besides prevents the formation of coarse, tough coagula during boiling. The formation of these coagula does not occur, however, if the buttermilk is boiled very slowly, so that the boiling point is not reached before thirty minutes. The caloric value of the buttermilk has by this process been increased from about 260 to 600 or 700 units per liter, thus approaching that of human milk. It contains a high number of caloridynamic units in a small quantity of fluid. The prepared buttermilk is a yellowish fluid, which after standing separates into two layers, the upper one consisting of the milk serum, the lower one containing the casein coagulated and suspended in very fine particles. By this fine division it resembles the fine coagula of human milk in the infant's stomach.

The excellent results obtained with buttermilk feeding in Germany induced a trial

of this method at the Caroline Children's Hospital in Vienna (Director, Dr. Knoepfelmacher), with a result which the author considers worthy of reporting on account of its very encouraging features (1903).

In preparing buttermilk, they followed Teixeira's prescription, and administered it in separate bottles of from 50 to 100 grammes. The daily quantity amounted in its calorimetric value to 80, 100, 120 units—*i.e.*, 120 to 200 grammes of milk per kilogramme of the infant's body weight. In acute cases of intestinal disturbance after a period of from one to two days under rice-water feeding, buttermilk was administered gradually in increasing quantities. After improvement had set in the quantity was increased, not only according to the actual weight, but also to the age of the child.

Their experience includes more than twenty cases, mostly of malnutrition, resulting from chronic gastrointestinal disturbances, with occasional acute exacerbations up to the intensity of cholera infantum; then some cases of *allaitement mixte,* one case of habitual vomiting (pylorospasmus), one prematurely-born child, and one case of icterus catarrhalis. Some of these cases had not responded to other methods of feeding and treatment.

The increase of weight during buttermilk feeding is accompanied by a general improvement. The babies become quiet and good-natured, they sleep well, and have a good appetite. Vomiting ceases, or becomes less frequent; the frequency of the stools lessens, although they may occur oftener than in normal breast-fed babies. The stools are usually yellow, homogeneous, pasty, and of a neutral or alkaline reaction. But even in cases in which the quality of the stools did not satisfy their expectation, and in which they had to dilute the prepared buttermilk with small quantities of rice-water, they observed a good increase of body weight. All the babies liked the buttermilk, even as an addition to breast feeding.

Their encouraging experiences being limited to a comparatively small number of cases, the author briefly reviews the results of others based on a larger experience, to show how excellent a remedy and food buttermilk has proved to be. The excellent experiences of Teixeira are so numerous that they have been the principal inducements for similar experiments in Germany. Teixeira's six years' experience covered many hundreds of cases which not infrequently manifested an increase in weight of from 500, 600, to 700 grammes. Baginski's observations range over 182 cases in the medical wards of the Emperor and Empress Frederick Hospital of Berlin. In 150 the results were excellent, in the remainder the improvement was less pronounced; in 32 children the feeding was unsuccessful. In the entire hospital he had fed 300 children with buttermilk with similar results. A few children were taken directly from the breast and given buttermilk because the mothers could not visit the hospital to nourish their children.

Salge reports 85 cases with very satisfactory results out of 119 babies who were fed with buttermilk for dyspepsia, chronic entero-catarrh, atrophia, and in *allaitement mixte.* In the remaining cases buttermilk failed, but so did also other methods, including human milk.

Jean Cardametic (Greece), Rensburg, Leschziner, and Escherich (Vienna) had similar experiences, and Dr. Riether, primarius of the foundling institution of Vienna, stated that atrophic babies throve excellently on buttermilk after other foods had been tried in vain. He found the remarkable fact that breast-fed babies who had been dystrophic without determinable cause showed a remarkable increase in weight and improvement if small quantities (one teaspoonful to one tablespoonful) of buttermilk were administered before each breast feeding. He supposes this to be due to the digestion-promoting action of lactic acid, which perhaps may also account for the good results obtained from buttermilk feeding in *allaitement mixte* of healthy babies.

Teixeira's original method of preparing buttermilk has often been modified to meet

special indications. For instance, the flour has been partly or entirely replaced by various dextrinized flours (Kindermehle) for babies in the first weeks of life, or for babies whose feces showed upon microscopical examination, or with the iodine test, starch in a greater amount, indicating insufficiency of starch digestion.

In extreme intolerance of carbohydrates the flour can be dispensed with entirely, and even the sugar may be replaced for a short time by some other sweetening substance (saccharin). The low percentage of fat in buttermilk has been increased with the best results (Rommel, Rensburg, Schlossmann, Huebner) by the admixture of cream or sesame oil, when buttermilk alone did not give satisfactory results, and an increased amount of fat was needed. For it is evident that fat cannot be replaced by carbohydrates, even isodynamically, for an indefinite period of time, since the principle of isodynamic substitution is not applicable arbitrarily or without limit; indeed, in some cases the poverty of fat in buttermilk may be a drawback.

Considering the almost paradoxical composition of an infant food of such approved and undoubted value in various intestinal disturbances which so often accompany artificial feeding, any attempts at explaining these results become very interesting. The unexpectedly good results obtained from this food, which is so rich in albumin, have been explained by the relative lack of fat; but experiments with simple skimmed milk (Knoepfelmacher) and the fact that the addition of cream aids the good results obtained in many cases do not support this supposition. The easy digestibility of the casein of buttermilk is almost universally admitted; it is probably due to the distribution of the former in extremely fine floccules as a result of the mechanical process of churning. In addition, the acid reaction, the abundance of carbohydrates, with their acid products of fermentation within the intestinal tract, may perhaps protect the albumin from more intense putrefaction and influence the reaction of the soil of the intestinal bacterial flora.

According to Rubinstein's investigation, pathogenic bacteria (of diphtheria, typhoid, tuberculosis, bacillus pyocyaneus) as a rule gradually perish spontaneously in buttermilk, both on account of the increasing acidity and the presence of the bacillus acidi lactici, or they are easily destroyed by boiling for only one, two, to three minutes. We further know that the acidity of the food promotes tryptic digestion, as the acidity of the stomach contents energetically stimulates (Pawlow) the secretion of trypsin. The digestibility of the nitrogenous substances of buttermilk lessens the work (Huebner) of the glands of the stomach and the intestines; the amount of energy thus spared is beneficial to the organism of the baby.

As to the indications for the use of buttermilk, no absolute rules can be formed, nor is any strict classification of the various intestinal disorders unanimously accepted. Buttermilk has been used with best results in insufficiency of fat—and of albumin—digestion; in *atrophia infantum* dependent on chronic entero-catarrh; in *dystrophia infantum* without determinable causes; in *allaitement mixte;* and in cases of sudden weaning. The high calorimetric value of the buttermilk renders it fit for feeding prematurely-born babies who are not able to nurse, or if no wet-nurse can be promptly secured. Many babies with intestinal diseases digest only buttermilk; others digest other foods as well. As a rule, acute intestinal disorders, and those chronic disturbances due to prolonged starch feeding, should be excluded. In case of intolerance for carbohydrates, buttermilk without flour, or even without sugar, may be tried for a short time.

The objections against a buttermilk régime are due to the fact that buttermilk of standard quality, which is indispensable for success, can be obtained only with great difficulty in large cities. The common commercial so-called buttermilk is indeed too often unfit for infant feeding on account of its contaminations, its unhygienic manipulation, and its unreliability with reference to acidity.

THE MEDICAL TREATMENT OF CONGENITAL PYLORIC STENOSIS.

In the *Lancet* of March 16, 1907, SUTHERLAND discusses the medical treatment of this affection. He does not refer to the surgical treatment, a subject which was very thoroughly considered at the Toronto meeting of the British Medical Association. His belief is that as our knowledge and experience of the medical treatment advance there will be fewer and fewer cases in which surgical intervention is called for.

1. *The Objects Aimed At.*—The aim of the medical treatment is to remove any source of irritation in the stomach which may maintain pyloric spasm, and to keep the stomach free from any irritating food material, digested or undigested, which may excite pyloric spasm. Within recent years many cases of this affection have been seen in the post-mortem room which presented hard, hypertrophied tissue and complete stenosis, and it was the common belief that only operative treatment could have relieved the condition. It must be remembered, however, that the pylorus has two functions, contraction and relaxation, and the fact that the muscular tissues generally are hypertrophied is no reason for assuming that only the power of contraction is retained. The author believes that both these functions are present at birth, and that there is in addition a congenital hyperplasia of the muscular tissues of the pylorus, as Cautley has so strongly insisted on. For a varying length of time, days or weeks in different cases, all goes well and the pylorus acts normally. But a time comes, even in the most carefully fed cases, when some irritating (undigested) food lies in the stomach, and the pylorus contracts strongly and remains closed. Vomiting follows. The repetition of such a condition gradually induces a more or less continuous spasm of the pylorus, or at least a spasmodic contraction which seriously interferes with the normal emptying of the stomach.

It may be that in some cases, as in those recorded by Willoughby Gardner and Still, it is possible solely by careful dieting and the use of a food leaving little residue in the stomach to check this overaction of the circular fibers of the pylorus. Such cases are probably rare, but they support the view that there is no inherent vice in the pylorus. They are rare because a diagnosis could seldom be made at a stage when such treatment would usually be effective. By the time a diagnosis can be made with certainty the spasm of the pylorus is established, and as the result hypertrophy and dilatation of the stomach have followed. We have then to deal with a fastidious, irritable, dog-in-the-manger pylorus, which must be humored and soothed and deferred to in every way. It is not to be supposed that even in marked cases the pylorus never relaxes. At operations it has frequently been found that the hypertrophied pylorus can and does relax, and will often admit the little finger without difficulty. In many cases the presence of fecal matter in the stools and the absence of vomiting for a week or more show that food is passing through the pylorus. The gravity of the affection lies in the fact that it does not do so in sufficient quantity for the nutrition of the infant. These would appear to be the grounds on which medical treatment may be expected to do good, and, expressed in other words, the aim of the treatment is to restore the function of relaxation of the pylorus which has been in abeyance owing to the more powerful action of the constrictor muscular fibers.

2. *The Food and Feeding.*—Although the stomach is much dilated and is capable of holding a large amount of food, small feeds are called for in order to secure complete digestion. Two or three ounces will be found sufficient at a meal, and in bad cases one-ounce feeds are advisable. In order to supply a sufficient amount of nourishment the number of meals must be increased. An infant aged one month should be fed every two hours day and night, and in bad cases, when only small quantities are allowed at a time, every hour by day. This may have to be carried on for some months unaltered, but if the progress of the case allows of it one will naturally try to increase the amount at a meal and feed less

often as time goes on. If the infant will sleep for longer intervals at night it should be allowed to do so, but hunger will usually awake it with great regularity. Small quantities, from one to four drachms, of plain water or dill water or cinnamon water may be given between the feeding times if the child is thirsty or wakeful. The difficulty in the complete digestion of the food in the stomach lies in the proteids and the fats, more especially the latter. Over and over again the author has found the addition of cream or cod-liver oil bring on gastric irritation and vomiting.

If good breast milk is available it is the best food. A chemical analysis of the milk should be made, and one would prefer to have rather a low amount of all the chief solids. The fat should not be more than 3 per cent. The quantity given at a time must be regulated by the duration of the feed, five or ten minutes as the case may be. Unfortunately, in many of these cases one finds that suckling has been stopped in the belief that the milk was disagreeing with the child, and one of the most useful adjuncts in the treatment is lost.

If artificial feeding is employed, cow's milk as usually modified does not act well owing to the heavy curds which remain in the stomach. The foods which have proved most successful in the author's experience are peptonized cow's milk (without added cream) and whey. In addition, malt extract, raw meat juice, and grape juice have been given daily in small quantities. No doubt other foods may be found equally efficacious, and the question of the suitability of the food is to be decided by the state of the stomach contents after washing out.

3. *Gastric Lavage.*—The stomach should be washed out once a day for a prolonged period, and in bad cases this proceeding may be required twice daily for a time. It is quite a simple process in young infants, and if properly carried out leads to no discomfort or disturbance. It should be done when under normal conditions the stomach is empty—*i.e.,* two or two and a half hours after a meal, as the case may be. The value of the information gained from the nature of the stomach contents cannot be overestimated. The washed-out material should show a small amount of soft flocculent matter, which tends to get less in successful cases as times goes on. If, on the other hand, a large amount of matter is washed out, or undigested curds, it is clear that the food is not properly digested and will maintain the pyloric spasm. Dr. Cautley has pointed out that in many cases the mere washing out of the stomach systematically will check the vomiting and that this may prove misleading. This is perfectly true, and therefore one must examine carefully the nature of the stomach contents in order to see whether the residue would be likely to pass the pylorus. If this residue is of the soft flocculent nature described above one may reasonably expect that it can, and will, prove non-irritating, and will eventually pass naturally through the pylorus. Other indications of improvement must also be looked for and will be referred to later. For the observation of these points and for the lavage to be of any real value it is of the first importance that the physician should carry out the proceeding himself and not entrust it to any nurse, however skilled and experienced she may be. Gastric lavage is not only beneficial to the infant, but is also the means of showing the physician how to regulate successfully the food and feeding.

4. *Signs of Progress.*—The vomiting ceases. This usually follows quickly after lavage and suitable feeding have been carried out. The bowels act naturally. This is a very important sign of progress, for it is in such marked contrast to what occurs in untreated cases. In the latter constipation is the rule, artificial aids per rectum being very often required, and the motions contain little fecal matter. After the medical treatment has been begun the bowels act two or three times a day without artificial stimulation, and the motions are larger and consist of fecal matter. The stomach peristalsis becomes less marked, less strong, and gradually passes off. The complete disappearance of peristalsis may take some weeks or months, but the lessen-

ing is usually seen early in successful cases. The discomfort, pain, apathy, and constant whining of the infant are removed and are replaced by a placid and comfortable state, in which even smiling is gradually evolved. The nutrition of the infant is improved. This is manifested in a healthy color, in increased activity of the limbs, and in a slow gain in weight. It is very important to remember that these infants cannot be fattened rapidly, that any attempt to secure this will probably end in disaster, and that the less weighing there is the better, especially if there are anxious relatives about. The most suitable foods are not fattening ones, and any excess of food is apt to produce disturbance either in the stomach or the bowel. On the other hand, the vital powers of the infant can be very much improved and the disordered functions restored to healthy action by a simple diet, and the fattening materials can be reserved to a later period. Progress in the infant is usually marked by a slow increase in weight, somewhat fluctuating at first, but tending to become steady as time goes on.

5. *Complications.*—A common complication in the course of treatment is diarrhea. The bowel in such cases has been out of use for some time and is consequently unprepared for the food material which now passes through the pylorus. Hence probably arises an irritative form of diarrhea. The best treatment is to reduce the amount of food given by one-half and to keep it so until the diarrhea has ceased. At the same time half a grain of gray powder may be given twice or thrice daily. When the diarrhea ceases the amount of food can be again gradually increased. Such diarrhea is always serious and may prove fatal. When vomiting occurs no food should be given for two hours in order to rest the stomach. Sips of hot water may be given if the child is thirsty. Intestinal flatulence is to be treated, like diarrhea, by a temporary reduction in the amount of food.

6. *Medicinal Treatment.*—The use of antispasmodic drugs such as opium and the bromides has not proved of the slightest value in the experience of the author. Of course, infinitesimal doses of opium cannot be expected to do any good, but the writer has pushed the drug to its full physiological effects without any benefit whatever. Nor does it appear likely that the drug would have any special action on the circular fibers of the pylorus and fail to affect the longitudinal fibers to an equal extent. In cases of marasmic infants suffering from this affection, with all the tissues dried up, the use of saline injections both subcutaneously and per rectum has seemed beneficial. From four to ten ounces of normal saline solution can be given daily and will act as a restorative until the improvement of the pyloric function allows of the entrance of a sufficient amount of fluid into the system by the natural route. In cases in which the infant is much reduced or has a subnormal temperature, brandy, up to half a drachm daily, will be found of service as a general tonic. The administration of cod-liver oil by inunction, if it be of any value, would appear to be especially suited to the conditions present in this affection. The author has employed it only once, and in that case a skin eruption quickly followed and led to its discontinuance.

UNILATERAL NEPHRITIS—NEPHRECTOMY.

The cases reported by ANGERER (*Archiv für klinische Chirurgie*, lxxxi, 2) were the result of traumatism of the loin.

The condition showed itself several weeks after the injury, no symptoms of renal injury appearing at the time. The affection was characterized by colicky pains in the kidney, with hematuria. The urine showed albumin and casts, and the general health was profoundly influenced. Operation was undertaken in one case on account of hemorrhage, in the other on account of the severity of the pains. In each case the kidney was removed and recovery was perfect, all signs of renal disease disappearing. The kidneys were large and congested, with localized hemorrhages in the cortex. The justification for operation is believed by the author

to be shown by the prompt recovery in each case. Nephrotomy would be dangerous on account of the tendency to postoperative hemorrhage.

RECTAL CARCINOMA—OPERATIVE TECHNIQUE.

The method described by ROTTER (*Archiv für klinische Chirurgie,* Band lxxxi, 2) differs from that usually employed in being a combination of the sacral and abdominal methods. The operation is begun by the sacral route, and if this is found insufficient the patient is turned over, the abdomen opened, the abdominal part of the operation concluded, the abdomen closed, and the rectal operation continued.

The method has the advantage over that of opening the abdomen, first, that in many cases, especially in women, the entire mass may be removed by the sacral route, and the patient spared the dangers of celiotomy. In those cases, however, in which the tumor cannot be reached from the anus, the abdominal portion is performed before the sacral. Of 25 cases operated on by the sacroabdominal method, in 16 (twelve men) the abdomen was opened first, in 9 (seven men) the abdomen was opened after the sacral route had been started. This was required by adhesions to abdominal organs in 6 cases, and by lymph glands which could not be reached in 3 cases. In women the high operation is very rarely required by the extent of bowel involved. As much as 26 inches of the gut can be removed from below. Firm adhesions must be separated very cautiously, on account of the great danger of rupturing the bowel, which means almost certain death from peritonitis.

The results obtained were good, considering that all cases would die shortly if not operated on. The operative mortality in cases over sixty years old was so high that Rotter does not consider operation on such persons advisable. It is better to merely establish a fecal fistula. Excluding cases over sixty, the mortality was only 33 per cent. Apparent cure has resulted in 11 cases. In 3 there was recurrence. As regards continence of feces, in 70 sacral resections 20 died, 16 had continence from the time of the operation, 16 were successfully operated on afterward to restore continence, 6 were treated unsuccessfully.

The difficulty of the pelvic operation is incident to the depth of the wound, and Rotter had a special knife 12 inches long made, in order to incise Douglas's sac and free the mesentery in the male pelvis. If the hemorrhoidal vessels are tied no other ligatures are needed. If the bowel stump seems to be sufficiently nourished, and can be brought down to the sphincter without difficulty, it is best to resect the rectum immediately above this, and to join the ends. If the mesentery of the retained bowel is partly sacrificed, or if the patient is in bad condition, it is better to make a false anus in the sacral region, and if desired attempt the union of the bowel and anal end of the rectum at a later time.

HOUR-GLASS STOMACH.

The diagnosis of hour-glass contracture of the stomach is neglected in almost all the text-books, and SCHMITT (*Archiv für klinische Chirurgie,* Band lxxxi, 2) gives its characteristic phenomena in detail. With the exception of the congenital form, which causes no symptoms, he believes that all forms, spastic, cancerous, and cicatricial, are dependent on ulceration of the stomach. If dilatation is present it may depend on a narrow stricture or on associated stricture of the pylorus.

The most striking symptom is usually vomiting. This may resemble the vomiting of pyloric obstruction if the stricture is near the pylorus, but differs in a tendency for only certain sorts of food to be vomited, although other food was ingested at the same time. The more easily digested foods pass through the stricture and are not vomited. Vomiting occurs

soon after eating if the stricture is near the cardia, and only a small part of the food ingested is vomited. If the stricture is central, as is usually the case, the vomiting occurs in two to three hours, and in several portions. There may be apparent vomiting after eating, but nothing come up if the cardiac portion is irritated and empty and the pyloric portion is dilated and too weak to empty itself through the stricture. In some cases the matter first vomited is recent, and later old and decomposed; this is also seen in some cases of extreme dilatation following pyloric obstruction. The pain is more severe than that of ulcer and less amenable to treatment. It is not so promptly relieved by vomiting, and returns sooner when food is taken or the patient rises after a treatment in bed. The pain which accompanies vomiting is especially violent.

Valuable information is given by the observation of lavage, but the chemical examination of the stomach contents is of little value. With the patient in the erect posture the stomach is repeatedly washed until the water returns clear; the patient then leans toward the right or backward, and there is often a sudden flow of fresh or old and decomposed food, which has come from the pyloric part of the organ. In other cases the lavage water fails to return. "It seems as though the stomach had a hole in it." The double form of the stomach may be shown by palpation and percussion of the organ dilated with gas or water, or may be shown by intragastric illumination with a gastric electric lamp. The most conclusive method is, however, the examination with the fluoroscope after ingestion of bismuth. Several hours must elapse between the ingestion and the illumination, as the bismuth may pass the stricture slowly. The treatment is not very satisfactory. It is rarely possible to unite the two portions of the stomach more freely, and the most effective treatment at present seems to be gastroenterostomy. Even if a plastic operation on the stomach is performed, a gastrointestinal fistula should be added.

OPERATIONS ON THE CEREBELLUM.

The results of these operations have improved so rapidly in recent years that BORCHARDT (*Archiv für klinische Chirurgie*, Band lxxxi, 2) has reviewed the entire subject in the light of present statistics.

Very extensive exposure of the base of the brain can be made safely. Both sides of the cerebellum may be exposed at once by forming on each side a quadrangular flap of scalp and skull, extending from the mastoid process to a point above and inside the occipital protuberance. These flaps being turned down and all bleeding stopped, the central part, not including the longitudinal sinus, is cut through at its upper and lower ends and also turned down. The bone is thick and must be partly sawed before cutting or breaking. The danger from breaking into the foramen magnum has been exaggerated. The brain is well protected here by very thick membranes. The ligation of the transverse, sigmoid, and occipital sinuses is in itself harmless. The longitudinal sinus and the tentorium must be spared. If the tentorium is injured, prolapse is almost certain to follow. The cerebellum being exposed is palpated, punctured, or incised as required, and also pushed aside with spatula, to facilitate examination of the base of the skull. If the shock is very great after opening the skull it is best to wait, and to examine the brain and complete the operation later. If after the operation is concluded it is found impossible to return the cerebellum inside the dura, it is better to reduce its size by partial resection than to leave part of it outside the dura. Puncture of the ventricles is apt to lead to sudden death. The dura is loosely closed to allow escape of secretions. Prolapse after operation is not always a sign of infection, but is almost always fatal. Operation is indicated when there are signs of pressure at the base of the brain, and when the diagnosis is not certain. The first indication of choked disk is the sign for immediate operation.

The various conditions which demand

operation are the following: (1) Cholesteatoma. The results have been favorable when the tumor was small enough to be removed *in toto*. A layer of sound tissue must be removed on all sides, as cholesteatomata resemble the malignant tumors in their tendency to recurrence. (2) True tumors, neuroma and sarcoma. The results here are also good. Of 101 cases reported, the tumor was found in 51, and of these 12 were cured. No tumor could be found in 60, but 5 of these were entirely relieved by the operation; 12 other cases showed temporary improvement. (3) Cysts. Here again the results are very good. As many of the cysts arise from softened sarcomata it is not wise to merely tap them. The entire wall should be examined, and if necessary resected. In 14 cases 13 were cured. (4) Neuroma of the cranial nerve roots. Tumors are found on the roots of the fifth, sixth, seventh, eighth, and ninth nerves, especially the eighth. Operation is always justified, as the localization is quite certain and the tumors are rapidly fatal if let alone. They are generally well encapsulated. Removal should not be attempted if the tumor is very large or not well defined. Is it justifiable to remove part of the cerebellum in order to expose such a tumor? Experiment has shown that the removal of more than half of one lobe is not well borne, so no more than this should be resected. (5) Decompression. This is performed for large tumors and for some cases of chronic meningitis. The results are generally good, but temporary. The indications are not yet entirely precise.

PENETRATING WOUNDS OF THE ABDOMEN.

WREDIN (*The Military Surgeon*, vol. xx, No. 3), chief surgeon of the Russian army in Manchuria, notes in regard to the treatment of penetrating wounds of the abdomen that the completer the rest afforded to the wounded from the moment the wound is inflicted, the better the prediction. As to the wounds of small caliber rifles, death as the immediate result is observed only when large blood-vessels are involved. In all other cases the earliest symptom following the infliction of the wound is shock, the intensity of which is in inverse proportion to the distance from which the shot has been fired. Most of the wounded fall immediately with a sensation of a hard blow on the abdomen. They do not lose consciousness. There is usually little pain in the first hours following the wound, but a sense of great weakness, attended by a fall of pulse, and vomiting. These cases usually die in the first twenty-four hours. The treatment on the battle-field is absolute rest and liberal injections of morphine. These remarks apply to those who have had abdominal wounds from small caliber rifle bullets at a distance up to 200 yards. With the increase in distance the character of wound becomes more and more favorable, and beginning from the distance of 400 yards the explosive effect of the bullet is hardly perceptible. Thereafter the first symptoms of shock become slighter, the man struck does not always immediately fall, but is often able to walk a certain distance, though shortly vertigo, paleness, and weakness set in, obliging the man to lie down. There is also often vomiting, especially in those who drink much water. These cases apparently offer excellent chances for laparotomies, but as a matter of fact the expectant treatment gives a much larger percentage of recoveries. A small caliber bullet often leaves openings so small in the hollow viscera that muscular action alone is sufficient to close them. Nor is prolapse of the mucous membrane observed. As to the effect of motion incident to transportation, Wredin notes the number of cases of death was least among those who had entered the train on the day of its arrival and was greatest among those who had entered the train on the day of its departure; thus showing that even transportation by rail in the soft-springed Pullman cars exerted a distinctly deleterious effect. He notes

that if all those wounded in the abdomen had been placed in a proper condition of complete rest for at least the first week after the infliction of the wound, the issue undoubtedly would have been still more favorable.

As to medicinal treatment, morphine is advocated by Wredin mainly because of its antagonistic effect upon shock.

Gunshot wounds of the abdominal cavity inflicted by rifle bullets give an approximately general mortality of forty per cent. The mortality from wounds inflicted with shrapnel bullets is nearly twice as great. This is explained by the fact that the diameter of the shrapnel bullet is about three times as large as the diameter of the rifle bullet, and its initial velocity is about six times less; also the shrapnel bullet has no hard coat, and from the very moment the shell bursts is easily subject to different deformations. Hence Wredin holds that active surgical interference is indicated in all cases of shrapnel wounds of the abdominal cavity, not only for the purpose of stopping intra-abdominal hemorrhage, but also to isolate the injured region by tamponing, as this cannot be done by nature. The suturing of the injured margins of wounds of the stomach, the intestines, or the bladder is a dangerous and purposeless waste of time. Active operative intervention is also indicated in all cases when the abdominal cavity is wounded by deflected bullets or fragments of shells, provided the general condition of the wounded and the surrounding circumstances are favorable. A deflected bullet loses a great part of its initial velocity and usually has become deformed, hence produces a greater destruction of tissue. Such wounds are often observed with artillerists, because when gun-fire is directed against a battery a great number of bullets are deflected from the cannons and their stands. Shock in such cases is for evident reasons distinctly expressed, and a great number of these wounded perish early.

The stab and cut wounds of the abdominal cavity inflicted during the Japanese-Russian war were with the bayonet and the Cossack's pike, the wounds of the latter class all without exception soon ending in death, this depending upon the size of the arm as well as the immense force with which the wound was inflicted; not only the head but also the thick shaft of the pike usually piercing the abdominal cavity. The Japanese bayonet is a long, solid, pointed knife, whereas the Russian bayonet has the shape of a four-faceted conic awl. The Japanese bayonet therefore makes more or less longer open cut wounds of the abdomen, with grave injuries and even prolapse of the intestines, usually resulting in rapid death from traumatic shock, hemorrhage, or acute septic peritonitis. Surgical interference is indicated when the condition of the patient warrants it for the purpose of stopping the hemorrhage, which in these cases is always profuse, and suturing the injured organs, with following tamponade of the abdominal cavity. In the front field hospitals, prolapsed intestines should in no wise be reduced, the aseptic conditions being very imperfect. Here nothing but aseptic dressing, with a considerable quantity of cotton-wool as protection against cold, should be applied. After injection of morphine the wounded should be transported at the earliest convenience, for a radical operative intervention, to the field ambulance or the nearest hospital.

The Russian bayonet inflicts a punctured wound the margins of which close quickly after the bayonet is extracted, and the mobile loops of intestines and big blood-vessels often escape the rather blunt and narrow end of the weapon.

The treatment of these cases should always consist in operative interference if the general state of the wounded admits it, the surgeon following the course of the wound and closing the perforation by suture; tampons should then be inserted into the abdominal cavity.

As a result of his personal observations Colonel Wredin believes that active operative interference, when admitted by the

general condition of the wounded and the surrounding circumstances, is indicated in all cases of perforating wounds of the abdominal cavity, with the exception of wounds inflicted with the modern small caliber undeformed rifle bullets.

All cases of abdominal wounds require absolute rest for at least the first week after the infliction of the wound, and morphine is the remedy *par excellence*.

TREATMENT OF HEMORRHOIDS UNDER LOCAL ANESTHESIA WITH STERILE WATER.

GILMAN (*Boston Medical and Surgical Journal*, April 11, 1907) says that nearly all uncomplicated cases of hemorrhoids can be radically operated upon in the office or at the patient's home under local anesthesia with very little pain or discomfort, and with but slight, if any, interruption in the daily habits and engagements of the patient. The degree of anesthesia produced by cocaine and similar products is very satisfactory, but their use is frequently followed by toxic effects.

During the past eighteen months the author has operated upon 23 cases of hemorrhoids under sterile-water anesthesia, and upon 16 cases with the combined use of one-half of one-per-cent eucaine in two-per-cent boric acid solution and sterile water. The technique of the ligature operation for the radical cure of hemorrhoids under the combined use of eucaine solution and sterile water is as follows:

The patient is given an enema of one pint of warm water to clean out the rectum; then a small enema—four to six ounces—of equal parts of warm water and glycerin is thrown into the rectum, the passage of which causes straining and a resulting engorgement of the hemorrhoidal tumors. The external parts are scrubbed and made as aseptic as possible; then the eucaine solution is used to anesthetize the sphincter muscle. A sufficiently long anesthetization needle should be used, and one point of entrance selected in the median line at 1 to 1¼ inches from the posterior anal margin. With one finger in the anal canal as a guide, the needle can be directed along either side of the anal wall, thus anesthetizing the muscle thoroughly. The sphincter should be carefully divulsed, when the engorged hemorrhoids are brought into view. These are now anesthetized with warm sterile water; the needle point is thrust into the center of the tumor and the water is slowly forced into the tissues in sufficient quantity to distend them until they are of a glassy-white appearance, when anesthesia is complete. The pressure exerted upon the terminal nerve filaments is sufficient to prevent cutting pain, although some patients complain of discomfort for a moment, due to distention, which is entirely relieved as soon as the tissues are cut. The tumor can now be grasped with a hemostat and pulled down. A U-shaped incision is made at the mucocutaneous junction, and a stout linen or silk ligature is placed around the entire tumor and is securely tied. The part outside the ligature is excised, care being taken to leave a stump of sufficient size to prevent slipping of the ligature, or, when the tumor is very small, it can be left to slough. This method should be followed until all of the hemorrhoids have been ligated. Then a thick, wedge-shaped pad of gauze should be applied firmly to the anorectal region under a T-bandage. Laxatives should be given to produce a semisolid stool each day. The anal canal should be cleansed thoroughly, and an application of 10-per-cent solution of ichthyol in glycerin, balsam of Peru 50 per cent, or 2- to 4-per-cent solution of nitrate of silver made daily until sloughing is completed and the resulting ulceration healed.

The points in favor of local anesthesia in the operative treatment of hemorrhoids are many. It is safe and effective; it can be easily and quickly applied; it simplifies the work and takes away the fear which most people have of taking a general anesthetic. Pain at the time of the operation is rare. Postoperative pain is less than

under the old methods, and is very slight when sterile water is the agent used. The period of detention from business is greatly reduced, and often patients can go about their usual occupations, as confinement to bed is not an absolute necessity. It affords relief in some cases otherwise unsuitable for an operation, and takes many cases from the hands of the quack and itinerant. It enables the operator to secure permanent results, and, if properly applied, admits of as thorough and complete work as can be done under a general anesthetic.

THE OPERATIVE TREATMENT OF HEMORRHOIDS UNDER LOCAL ANESTHESIA.

HILL (*Boston Medical and Surgical Journal,* April 11, 1907) believes that the various standard operations for hemorrhoids are all eminently satisfactory so far as the radical cure is concerned, but that the objection to them is that they require ether or chloroform narcosis. It has been abundantly demonstrated during the last few years that nearly all cases of hemorrhoids can be relieved just as radically and safely by means of infiltration anesthesia. The ligature operation is the choice of all operations when local anesthetics are employed. The success of the operation depends upon the manual dexterity of the operator and careful attention to the details of producing the anesthesia. A careful preliminary examination is important to accurately determine the situation and size of the hemorrhoids which require removal, as well as to ascertain whether any other condition, such as fissures or ulcers, coexists. On the day before operation the bowels should be moved by a laxative. In case immediate operation is desirable the rectum can be cleared out by giving an 8-ounce enema of boric acid solution.

The patient is placed in the right semiprone position, since the greater number of hemorrhoids are usually to be found on the right side. If the external sphincter muscle is hypertrophied and spasmodic so that the hemorrhoids cannot be readily prolapsed, the sphincter muscle can be dilated with comparatively no pain by the injection of a few drops of cocaine solution into it at the point of entrance of the lesser sphincter nerves. The needle is inserted in the posterior commissure three-fourths of an inch from the anus, from which single puncture the nerve supply of the anal region may be effectually blocked. The divulsion of the sphincter is now carried out in the same manner as though the patient were etherized. The hemorrhoids being prolapsed are operated upon in rotation, beginning with the anterior one on the right side. Each tumor is in turn moderately distended with a one-tenth of one-per-cent solution of cocaine; then, seized with a pair of pile forceps and gently elevated, the hemorrhoid is dissected upward until it is attached by a narrow pedicle which contains its blood supply. A ligature is now passed about the pedicle as high up as possible and the hemorrhoid is cut off below the ligature. After the internal hemorrhoids have all been ligated, any folds of anal skin that are clearly redundant should be removed. If the base of these folds is quite broad it is best to unite the edges of the wound made in removing them by a catgut suture.

The after-treatment of these cases requires careful attention. The bowels, as a rule, should act on the second day, and daily thereafter. The anal region should be kept scrupulously clean and protected by wearing a pad of sterilized gauze. After the ligatures have separated, applications of 15-per-cent balsam of Peru in castor oil, or ichthyol and glycerin, 15 per cent, should be made to the anal region to secure rapid healing of any lesions which may remain. Should there be much soreness or pain when at stool or otherwise, this can usually be relieved by the injection of an ounce of sterilized olive oil at night. The operation should be performed in a hospital, except in mild cases where only one or two piles are to be removed.

After operation absolute confinement in

bed is unnecessary, patients doing better if somewhat on their feet, but they will not be able to attend to their usual avocations in less than three or four days to a week.

PROPHYLAXIS IN SYPHILIS.

MAISONNEUVE (Paris, 1906) reports his experiments with 10-per-cent calomel ointment as a prophylactic in syphilis recommended by Metchnikoff. Metchnikoff's original experiments were with mercurial ointment, but he found this was too irritating to the skin to be used as a general measure. Maisonneuve, after submitting himself to a careful personal examination, in order to definitely preclude any evidences of syphilis, allowed himself to be inoculated, in the sulcus coronarius on each side, from the virus of two initial lesions from two well-defined cases of primary syphilis. This in the presence of Metchnikoff and four other physicians. The skin was scarified and the virus thoroughly rubbed into the abraded surface. One hour after the inoculation the parts were treated with 10-per-cent calomel-lanolin ointment. Apes which were inoculated with the same secretion showed typical lesions of syphilis; others, likewise inoculated, but also treated with calomel ointment, remained free from syphilis. Maisonneuve submitted himself to careful examinations for three months, without showing the slightest evidence of syphilis, and the wounds promptly healed within seven days.—*Southern Medicine and Surgery,* February, 1907.

EMPYEMA AND ABSCESS OF THE LUNG AS SEQUELS OF ACUTE SUPPURATIVE APPENDICITIS.

GAGE (*Boston Medical and Surgical Journal,* April 11, 1907) discusses those complications and sequelæ of appendicitis in which the pleura and lung are involved. The most common method of extension from the original focus of suppuration in the appendiceal region to the thorax is either intraperitoneally or extraperitoneally behind the kidney, first to the subphrenic space, thence through the diaphragm to the adjacent pleura, and finally to the contiguous portion of the lung with probable communication with the bronchus. In this way the abscess is frequently evacuated through the mouth. More rare methods by which these sequelæ may occur are either by localization of a general systemic infection or by the appearance in the pleura or lung of one or more abscesses which arise in the course of a secondary pyemia. These sequels of appendicitis occur in not less than two or three per cent of all suppurative cases.

The author refers to a case of his in which the patient was operated upon for empyema, and because of the dark color and fecal odor of the pus evacuated, suspicions were aroused as to the source of the suppuration. It was found on inquiry that the patient had a definite history of acute appendicitis three weeks before.

The right side is usually the one involved, although the left side may be invaded.

The mortality of these cases is about one in six. Even without operation, if evacuation of the abscess takes place through the bronchus, the prognosis is favorable. The author reports one case of his own in which recovery after a most critical illness occurred after evacuation of the abscess through the mouth.

As regards treatment, much may be done in the way of prevention by more efficient drainage of those appendiceal abscesses which extend back into the flank. This may be accomplished by leaving a large opening in the abdominal wall, high enough up to be directly over the upper part of the abscess, or by making a counter-opening in the loin. When a subphrenic abscess or pleural empyema is suspected and confirmed by physical signs, the two inches of the ninth and tenth ribs between the scapula and the anterior axillary line should be removed. If pus is present in the pleural cavity this cavity should be opened and drained. If the pus is below the diaphragm the upper part of the wound should be walled off with gauze and the abscess

opened and drained, avoiding if possible any contamination of the pleura.

The author believes that cases of pleural infection sometimes go unrecognized.

THE TRYPSIN TREATMENT OF CANCER.

LUTHER (*New York Medical Journal*, Feb. 23, 1907) presents a full discussion of the trypsin treatment of cancer, based upon knowledge gained by a visit to Beard and other workers in Great Britain, as well as upon some observations of his own. Beard's introduction of trypsin as a therapeutic agent in cancer is based upon embryological discoveries which he has made in the course of his studies of this subject. Instead of developing directly from an egg, the course of development of the embryo is extremely indirect. The fertilized egg undergoes karyokinetic division and subdivision to a limited number of mitoses depending upon the species. The result of this is a tissue named variously by Beard as phorozoön, trophoblast, larva, or a sexual generation. This tissue, which composes in reality, partly or wholly, the chorion, is endowed with "indefinite, unrestricted powers of growth." Digestion in these cells is an intracellular, acid, peptic one, as has been proved by Hartog.

The final division of these trophoblastic cells results in a primitive germ cell which again divides and subdivides to a various but definite number of mitoses depending upon the species under observation. The actual number for man is not known. This division results in a number of primary germ cells, again the number depending upon the number of divisions, this being definitely fixed for every species. For instance, in the skate the primitive germ cell undergoes seven mitoses resulting in 512 primary germ cells. From one of these primary germ cells the embryo develops. The remaining germ cells form the foundation for the succeeding generation—that is, they develop into the sexual glands of the growing embryo. Beard has observed these cells in various stages of migration into the embryo. In the earliest stages of the skate, while there are still three distinct layers, no germ cells are seen while the outlying blastoderm is crowded. As time advances they are found betwen the layers, and later still large numbers are seen there. The objective point of these migrating cells is the germinal nidus, and after arriving there they begin to undergo division, and finally, after a limited number of mitoses, develop into primitive ova if the organ is an ovary, or spermatogenic cells if a testicle.

After the embryo is well formed and the organs mapped out and functionating, the trophoblast is no longer of use and disappears. The cause of this disappearance is purely hypothetical, but Beard believes that it is due to the activity of the pancreatic secretion. Up to this time the cell divison has been an intracellular, acid, peptic one, and from this time, which Beard calls "the critical period," the digestion becomes an alkaline, pancreatic one, and as a consequence these cells are digested and absorbed.

This normal course is subject to variations. During the act of migration many of the primary germ cells never reach their objective point—the germinal nidus—but, wandering between the layers of the forming somatic cells, are obstructed in various corners and crevices and forever lost. The usual fate of these vagrant germ cells is degeneration and absorption, but they may become encapsulated and remain. Should any of these encapsulated vagrant cells attempt to go through its life cycle, the result might be a monstrosity such as the Siamese twins; one embryo attached to another; or one embryo, partly or wholly developed, more or less completely embedded in another well-formed one. So we may go down through the scale to the class of tumors known as embryomas, teratomas, or dermoid cysts, which in the ovary would be the result of persistent germ cells.

In the development of a malignant tumor, either the embryonal stage is skipped by these developing vagrant cells, and in proliferating a trophoblast is formed, or the cell attempts to go through with its normal cycle—the production of an ovum which in

its turn develops into a trophoblast; the embryo failing, there is no "critical period" and no check put upon the "indefinite, unrestricted power of growth" with which these cells are endowed. This is an "irresponsible trophoblast," or malignant tumor.

Beard, having noticed the trophoblast gradually disappear with the development of the pancreas, decided that the pancreatic ferments caused this disappearance. If this were true, he reasoned that the pancreatic ferments would cause the disappearance of an irresponsible trophoblast or malignant tumor. This theory was confirmed by experimental work. The pancreatic ferment acts upon the cancer albumin and the cancer ferment in an antagonistic manner, as a result of which the tumor gradually diminishes in size and disappears by absorption, or is killed and converted into a benign fibrous mass.

Shaw-Mackenzie had introduced the use of trypsin in the treatment of cancer at about the same time, but was led to its use in an entirely different way.

The treatment consists in the hypodermic injection of a solution of trypsin daily for a period of four weeks, followed by the hypodermic injection of a solution of the diastatic ferment, amylopsin, every other day alternating with the injection of trypsin, the maximum dose of which is maintained. This for four weeks, followed by another period of four weeks or more, during which daily injections of amylopsin alone are given.

The trypsin injection which the author has used is a sterilized glycerin extract of the freshly macerated pancreatic gland, and besides trypsin it contains all the other pancreatic ferments. The amylopsin injection is, he believes, freed from the other ferments. They are both in 60-per-cent glycerin solution and consequently require dilution with two volumes of water or normal salt solution. They are put up in sterile glass ampoules, containing about 20 minims each.

The treatment should be started with a few preliminary injections of 5 or 10 minims before the full dose of one ampoule is given. After this the dose may be gradually increased. Maguire, of London, gives two ampoules, or 40 minims, as the maximum dose, but 75 minims is frequently given without bad effects. The dose of amylopsin should be graduated in the same way.

The injections may be given anywhere except into the tumor, on account of the pain and local inflammation produced. Probably the best place is the loose cellular tissue of the loin. It should be thrown deep into the cellular tissue, but not into muscle. The greatest care should be exercised to render the syringe and the skin at the seat of the injection sterile. Abscesses are apt to follow failure in this respect. Though the author has given over five hundred injections, not one has caused any more trouble than some soreness and induration, which lasts for a few days.

Trypsin is rendered inert by heat, consequently care must be taken to cool the syringe after boiling before the solution is drawn into the barrel.

In addition to the hypodermic injection, stress is laid upon the oral administration of some pancreatic preparation. The local application, where possible, of a liquid or powdered preparation of trypsin or pancreatin is also recommended where the cancer can be reached. This undoubtedly is useful, for it does cause a rapid breakdown of the mass.

Some patients after receiving a number of injections show toxic symptoms, which Beard attributes to the digestion and absorption of the cancer cells. These symptoms, beginning with nausea and vomiting, pain in the back and drowsiness, develop, but usually clear up promptly under injections of amylopsin, while the trypsin treatment is continued but the dose diminished. Should the trypsin be continued without amylopsin in these cases, high arterial tension, albuminuria, rigors followed by rise of temperature, and coma might develop.

The trypsin treatment has been used by various observers in different parts of the world, and of the reported patients five have been pronounced cured, though in not one of them has the microscope corroborated

the clinical diagnosis. It is the consensus of opinion of those who have tried the treatment that it does in most cases cause an arrest or shrinkage of the growth; improvement in the general nutrition, in which the appetite improves and the weight is maintained or increased; diminution or cessation of pain, and diminution in the discharge and fetor except in those cases in which sloughing occurs. Large doses are required, and perfection of the treatment will necessitate the finding of methods for obtaining pure and more concentrated solutions of the ferments so that they can be administered in reasonable quantities.

CYSTOPEXY FOR FALLING OF THE BLADDER.

LAPTHORN SMITH (*Montreal Medical Journal*, April, 1907) says that among the many causes of cystitis is cystocele, which usually accompanies falling of the uterus, but may occur alone. The cystocele is due to difficult labor, in which the head pushes the bladder before it, or to the too early use of the forceps. By these means the bladder is torn away from its attachments to the back of the pubis and to the anterior abdominal wall. When the cystocele has become marked there is dysuria, complete evacuation of the bladder is impossible, and the retained urine decomposes and produces an irritable condition about the neck of the bladder. By the straining which is thus caused the condition is made worse.

A little more than three years ago the author proposed the operation of cystopexy, or fastening of the bladder to the abdominal wall, as a remedy for those cases of cystocele accompanied by falling of the uterus which cause enough discomfort to justify the risk of opening the abdomen. He reported a successful case in the spring of 1904. The operation is very easy to perform. After the abdomen has been opened rather near the symphysis pubis, the bladder will be seen low down in the pelvis, and must be gently grasped with a bullet forceps and drawn up as high as it will go without employing force. Both the peritoneal surfaces on the bladder and on the anterior abdominal wall are scarified or criss-crossed with a needle until there is slight oozing. A curved needle is then passed through the abdominal wall, including all layers except skin and fat, then under the peritoneal and muscular layers of the bladder and out through the peritoneal and muscular layers of the abdominal wall on the other side, bringing after it a chromicized catgut thread, strong enough to last a month. Two or three similar stitches are passed at intervals of half an inch, after which they are firmly but gently tied. This is generally followed by fixation of the uterus about an inch higher upon the abdominal wall. Care must be taken not to allow the needle to go through the vesical mucous membrane, although there is very little danger of doing this as the needle can be kept in view all the time as it passes under the transparent peritoneum and muscular layer of the bladder. The larger the area of scarification on the bladder and abdomen the stronger will be the adhesion and the more certain will be the result. No precautions are necessary with regard to emptying the bladder; as a rule the patient can do this without the help of a catheter from the very first.

Smith reports a second successful case in the article which is here abstracted. He expresses the hope that the operation will be tried by some of the more prominent surgeons, and that, if it be found as valuable as he believes, it may be adopted as a standard method of treating these cases of bladder trouble.

MECHANICAL TREATMENT OF NON-TUBERCULOUS JOINT INFECTIONS.

TAYLOR (*New York State Journal of Medicine*, April, 1907) says that the chief things we have to do in joint infections are to improve general and local nutrition, prevent injury, and prevent or correct deformity. Motion of a joint or its use in bearing weight is injurious in the active stages of joint infections. Proper and timely control of joint function will usually relieve pain, allay joint irritation, prevent deformity, and favor recovery. The pain during onset and

in the early stages of some infections is often severe, and prompt relief is uniformly afforded by fixation and traction. Plaster splints are convenient for fixation. In applying them the padding should be moderate in amount and the bandaging should be even and firm. For strict immobilization the splint should include not only the joint infected but those nearest to it. To fully immobilize the hip, the trunk, pelvis and affected limb to the toes should be included. In acute rheumatism there are few measures that give the patient more relief than splinting.

When active suppuration is present prompt surgical interference is indicated, and this should be followed by mechanical treatment. In case the joint infection is due to a general infective process, the treatment of this general infection should be attended to. Infections of the spine, which are often painful and seriously disabling, are frequently relieved and ultimately cured by a fixation jacket, corset, or brace; recumbency in bed alone is not sufficient. In chronic joint infection constant exposure to fresh air and sunshine and attention to diet and general hygiene are very important. During convalescence local nutrition and natural drainage may be aided by vibration and motion of the joint, and if all irritation has subsided, by use of the joint properly controlled and regulated by mechanical appliances.

Splinting should not be rejected because of the fear of atrophy and stiffness. The atrophy is due to the inflammation and consequent disuse of the joint, and will occur whether splinting is done or not. After the joint inflammation has subsided the tissues will be restored unless the joint remains stiff. The stiffness is due not to splinting but to adhesive inflammation, which is likely to be increased by rough movements and neglect of splinting. The more one fears ankylosis the more strictly should the infected joint be splinted to prevent injury and deformity and allay irritation, and the more cautious should one be regarding forced movements. The way to cause certain ankylosis of a tender but somewhat movable joint is to use forcible movements of wide extent at frequent intervals. Passive and even forced movements have a place in breaking up adhesions and increasing motion in cured cases, but their use calls for ripe judgment and conscientious reserve.

INTESTINAL PERFORATION IN TYPHOID FEVER.

BLAKE (*New York Medical Journal*, February 23, 1907) says that approximately one-third of the deaths in typhoid fever are due to intestinal perforation. In 618 cases occurring at the Roosevelt Hospital the percentage of deaths due to perforation was 48.5. The percentage would undoubtedly be increased if autopsies were held in all cases of death, for in many cases in which autopsies are held perforations are found when none have been suspected. The estimated number of deaths in the United States every year from perforation in typhoid fever is about 10,000; whereas the number of cases operated upon is very small, only 225 cases having been reported as operated upon up to 1904. At the most liberal estimate, only two per cent of the cases of intestinal perforation come to operation.

The author has found that in cases which he had not seen before perforation the diagnosis was extremely difficult. The symptoms which the author has found in his experience to be most reliable are given. The first thing that happens when perforation occurs is leakage of intestinal contents into the peritoneum; this produces irritation before it can be said to have caused a true inflammation, and it is upon the symptoms of irritation that our diagnosis should be based. These are, first, pain which usually comes on suddenly and is often severe; secondly, tenderness; and thirdly, the most important of all, muscular rigidity. If, when a patient complains of pain, we examine the abdomen and find that it is tender over the usual site of perforation, namely, the lower right quadrant, and that in addition there is some rigidity of the abdominal muscles, the diagnosis is sure enough

to warrant operation. This symptomatic syndrome is present in a great majority of cases, although one or more of the symptoms may be absent; but usually, when so, some of the subsidiary aids to diagnosis are present. These are, chiefly, a sudden change for the worse in the patient's condition; he may sweat or shiver, his pulse may rise slightly or his temperature fall, free gas may be present in the abdomen as evidenced by diminished liver dulness, and lastly, there may be leucocytosis. Of course the presence of free gas in the abdominal cavity is conclusive, but as it is present only in less than one-third of the cases, its absence means nothing. Leucocytosis usually develops with peritonitis, but it may be absent even when the peritonitis is far advanced in patients with little reactive power; furthermore, it may be present without perforation.

About 25 per cent of the cases operated upon are saved by the operation. In many parts of the country it is impossible for the physician, even if he makes a diagnosis of perforation, to get a surgeon in time to help the patient. However, the number of surgeons who are competent to operate in such cases is increasing every year, and there are many who can be called and reach the patient in due time. It is well recognized that in all perforative conditions in the abdomen early operation gives the best results. Shock is no contraindication. Shock is due to the irritation of the peritoneum produced by the escape of the intestinal contents, and the susceptibility to irritation disappears upon the administration of an anesthetic. The administration of ether has repeatedly been observed to remove shock in these patients, the pulse at once improving and the color returning to the face.

The operative technique employed by the author at the Roosevelt Hospital in cases of typhoid perforation is as follows: General anesthesia with ether is used, with preference for the drop method. General anesthesia is better than local for these reasons: in the first place it robs the operation of its terrors to the patient, thus diminishing shock; and secondly, most important of all, it produces complete relaxation of the abdominal muscles, thus permitting a more rapid and complete exposure of the intestines. While the perforation is being repaired the anesthetic can be administered, and it can be practically stopped while the wound is being closed, particularly if some morphine has been given before the operation. Again, it is impossible to wash out the abdomen thoroughly under local anesthesia.

The incision is best made directly through the outer third of the rectus muscle, the direction of the incision conforming to that of its fibers. As soon as the abdomen is opened, the finger is introduced and the ileum is picked up close to the ileocolic junction. This, as a rule, can be done by feeling alone by simply hooking the finger from below up in this direction. The first three feet of the ileum are rapidly looked over, and if perforation is not found the cecum and appendix are inspected. In all Blake's cases the perforation has been in the ileum. He usually closes perforations up to five millimeters in diameter with three continuous Lembert stitches, the middle stitch being over the center of the perforation. As soon as the stitches are introduced the ends of the sutures are tied together, thus inverting the aperture. Larger perforations are closed according to the indications, care being taken not to narrow the lumen of the gut to a diameter less than half an inch. Resection should not be done if it can possibly be avoided. As soon as the perforation is closed the intestine is dropped back in the abdomen, a two-way irrigator is introduced, and the abdomen flushed out with saline solution.

In cases in which there is an abscess cavity or much necrotic fibrin left, a cigarette drain is introduced to the bottom of the pelvic cavity. When there is no gross necrotic material left deep drainage is not used, a cigarette drain being introduced simply through the abdominal wall into the peritoneal cavity.

The after-treatment is important. The head of the bed is only slightly elevated,

as these patients cannot be put in the typical Fowler position inasmuch as they are accustomed to lying flat on their backs. No food or water is given by mouth, and the stomach is washed out if the patient vomits. Rectal irrigations are given for one-half to three-quarters of an hour every four hours, two long rubber tubes being used, one for the inlet and one for the return. As soon as peritoneal irritation subsides and the function of the intestines returns, careful feeding of peptonized milk is commenced.

It has been observed that in most of the patients who have recovered the temperature has fallen to normal within the first twenty-four to thirty-six hours. It then usually rises and the fever runs its course. Relapses are not uncommon after perforation.

In the five years up to January 1, 1906, 618 patients with typhoid fever were treated at the Roosevelt Hospital; of these, 68 died, a mortality of 11 per cent. There were 33 patients with perforation, 21 of whom were operated upon, with seven recoveries, a mortality of 66.6 per cent; 12 were not operated upon, and all died. Of the 14 patients who died after operation, one contracted pneumonia the day after operation, and one died of a second perforation five days after the operation. One patient, counted as an operative cure, died twenty-four days after operation in a relapse.

There was one recovery after operation in a patient whose perforation had occurred three days before admission to the hospital; this patient, a boy sixteen years of age, seemed to be moribund, the skin was livid and blotched, there was suppurative peritonitis throughout the entire cavity, and the pelvis was nearly filled with fecal matter, two perforations about three millimeters in diameter being found in the ileum. After washing out the abdomen a drain was introduced into the pelvis, and the patient made a satisfactory though somewhat tedious recovery.

Blake has decided from his experience with this boy that he would never refuse to operate upon a case of typhoid perforation unless the patient was actually dying.

ASEPTIC INTESTINAL SUTURE.

A method of intestinal anastomosis in which the contents of the bowel has no possible chance of escaping is described by Rostowzew (*Archiv für klinische Chirurgie*, Band lxxxii, 2) in a fully illustrated article.

The method of circular anastomosis is the following: At each end of the part to be resected an enterotribe is applied, and close to it, next to the piece to be removed, an intestinal clamp. The enterotribe is closed tight and screwed down. Then the bowel is burnt through between the enterotribe and clamp by Paquelin cautery. The mesentery corresponding to the resected portion is ligated and cut through, and the part removed. The enterotribe remains on the end of the remaining portion, and is rubbed over on its free surface with the cautery. In this way the bowel crushed by the enterotribe is burnt so that when the enterotribe is removed there is a "fine, crinkled, transparent seam." The walls of the intestine are fused together, firmly enough to hold the lumen closed. The same procedure is done with the other end of the bowel. The two ends are then laid together, so that the burnt seams lie upon one another, and the suture is begun.

The first suture passes through the entire thickness of the mesentery, at its insertion in the bowel. The following sutures include the serosa and muscularis of the intestinal wall, and are applied so that the suture enters the wall about three-eighths of an inch from the crinkled seam, and emerges not very far from it, including over one-eighth inch of muscularis and serosa. It is then passed in a similar manner through the corresponding part of the other intestine. About nine such sutures are placed on each side of the seam. The sutures are then ligated, closing the intestine entirely. Gentle traction on the middle sutures, aided if necessary by manipulation of the line of suture, will now draw the fused surfaces apart, inside the lumen of the bowel, and a perfectly free passage is left, which has no tendency to result in stricture. The opening in the mesentery is closed as usual, and an additional row of

Lembert sutures placed around the anastomosis for greater assurance. The author has devised special instruments for the rapid and safe performance of the method. By use of the special instruments, lateral anastomosis is performed in a similar manner.

PROCTOSCOPY.

In an article dealing with the benefit to be derived from this method, SULTAN (*Deutsche Zeitschrift für Chirurgie,* lxxxvi, 5) brings up two new points.

The first is the danger of bursting the rectum by an extreme inflation with air. This is to be feared in persons of reduced vitality, with marked relaxation of all the muscles, in the presence of old inflammatory conditions. The accident has been reported several times. Such cases must be excluded from rectoscopic examination. The second point to which he draws attention is a new instrument for obtaining small pieces of tissue from the rectal mucosa, for microscopic study. It consists of a handle bearing a shaft 22 inches long which has at its outer end two small rings like ring curettes, which can be placed at any angle to the handle; after introduction these are brought together, seizing a bit of tissue between them. The instrument differs from similar instruments largely in its length.

STRICTURE OF THE ESOPHAGUS—PLASTIC OPERATION.

Very few cases in which a large defect in the esophagus was successfully filled have been reported, and ROKITZKY (*Archiv für klinische Chirurgie,* Band lxxxii, 2) thinks that the good result obtained by him in such a case was largely due to the formation of a gastric fistula before operation.

The esophagus was closed entirely by a scar from swallowing acid, and it was necessary to make a gastrostomy to feed the patient. Seven weeks later, the stricture having been found impermeable, a plastic operation with a skin-flap was performed. The esophagus was exposed by an incision along the left sternomastoid, and the scar or stricture, which was 4 inches long, split from end to end. Sounds were passed to the stricture from above and below, and each end of the esophagus was opened. A flap of skin with its upper corner near the point of the chin, and its right border along the right sternomastoid, was prepared and turned into the wound so as to surround the scar tissue and both openings, thus forming a tube lined with epidermis. The wound was closed as far as possible, and nine days later the base of the flap was cut through and the external wound closed with drainage. A large rubber tube was left in the stricture and held by one thread to the mouth and by another to the gastric fistula. This tube was left in place for twenty days. A small fistula remained, which closed in a month. Not until then was even liquid food given by the mouth. Sounds were passed four months later and the tube found to be free from stricture. The good result obtained in this case is believed by the author to be largely due to the fact that the gastric fistula permitted food to be given for a month before the esophagus had to be used.

GRITTI'S AMPUTATION ABOVE THE KNEE.

This method, which consists in fixing the patella to the lower end of the femur, with a view to making a firm stump, was almost abandoned, according to BLOCH (*Archiv für klinische Chirurgie,* Band lxxxii, 2), because in the preaseptic era it was difficult to obtain union by first intention, which this amputation requires.

Koerte has performed the operation 35 times—14 for gangrene, 10 for other lesions, and 11 times for injury. Six of the gangrene cases died. Of the remaining cases 14 were reëxamined to determine the ultimate result. Of these, 10 had stumps which were well formed and free from tenderness. One case showed slight and three extreme tenderness. The records showed that the tender cases were those in which there had not been union by first intention, but suppuration of the wound. The tenderness was explained by radiograms which showed the

ends of the bones deformed by growths of stalactites. This is evidently due to inflammatory irritation of the periosteum, caused by the suppuration during healing.

As the good results appear to depend on healing without inflammation, the operation should not be done in cases in which infection of the wound is probable, as, for instance, in destructive crushing injuries. The technique is simple. A curved incision from epicondyle to epicondyle, passing below the patella, forms the anterior flap. The posterior flap is square, at the level of the joint. The femur is sawed through just above the epiphysis at a point where its cross-section is the size of the patella, and after the posterior surface of the patella has been sawed away it is sewed to the lower end of the femur by periosteal sutures. The flaps are both well nourished, and the operation is therefore especially adapted to senile gangrene and to diabetic gangrene. It is the operation of choice in all cases in which uninjured tissues are used for the flaps, and there is likelihood of union by first intention.

SYNOVIA AND MENINGES—SUSCEPTIBILITY TO INFECTION.

The synovial and meningeal spaces differ from the peritoneal and pleural cavities, in that they always contain fluid, while the walls of the latter are practically in contact. The results of experiments on the peritoneum can therefore not be applied to them, and NOETZEL (*Archiv für klinische Chirurgie,* Band lxxxi, 1) reports experiments to determine their resistance.

The articular series were made by injecting minimal doses of pyogenic cocci into the knee-joint of rabbits. Noetzel found that infection would be caused by smaller amounts than needed anywhere else. This is not due to poor circulation, as blood is absorbed quickly from a joint, nor to the synovia, which resembles other endothelia. It is almost certainly due to the character of the synovial fluid, which is thick and mucoid and contains débris of broken-down endothelium. This fluid is an excellent culture medium and contains no bactericidal substances. The bacteria are protected by its mucoid character from the direct action of the serum until they are so increased in number as not easily to be overcome.

The meningeal cavity was inoculated with the same organisms by trephining the parietal bone. A large amount of infectious material was required to cause death, and even in fatal cases no pus was seen. The brain tissue seemed much more susceptible than the membranes. Inoculation of other organs and tissues leads Noetzel to believe that differences in the apparent resistance of various parts depend on physical and not on specific characters.

POSTOPERATIVE OBSTRUCTION.

Intestinal obstruction occurring soon after celiotomy is a not uncommon accompaniment of peritonitis, according to MARTENS (*Deutsche Zeitschrift für Chirurgie,* Band lxxxvi, 6), who reports a number of cases following operations for appendicitis and salpingitis.

The condition is ordinarily dependent on a cord of fibrin constricting or bending the bowel, but may be due to abscess. The distinction between it and peritonitis is not always possible. There is more complete obstruction, and foul-smelling matter will often be found in the stomach even when there has been no vomiting. The stomach should therefore always be washed out in doubtful cases. To prevent the occurrence of obstruction after operation, especial care must be devoted to the study of the entire bowel in all celiotomies. Operations on inflammatory abdominal conditions should be performed early, before suppuration, and no drainage should be left in the abdomen. The bowels should be moved as soon after operation as possible. The condition may set in several days or several weeks after the operation. If obstruction occurs, the only hope lies in prompt operation. If the patient is in very bad condition a fistula may be formed, otherwise the obstruction is relieved and the abdomen closed. The operation gives 30 per cent mortality.

FRACTURES OF THE LEG—EXTENSION.

The results obtained by SCHRECKER (*Deutsche Zeitschrift für Chirurgie*, lxxxvi, 6) are very good. He studied only those persons who belonged to beneficial societies, determining how many of them had aid from the societies, the termination of such aid being called complete cure. This means full restoration of ability to labor.

Fractures of the tibial shaft showed complete cure in 88 per cent of the cases; fracture of the malleoli in 98½ per cent. Treatment by other methods gives cure in 75 and 85 per cent respectively. The treatment consists in weight extension in the long axis of the limb and at right angles to this. Straps are run up the sides of the limb as for the treatment of fracture of the femur, but no board is placed at the foot, as the plaster should embrace the ankle. The bottom of the loop is attached to a cord, which passes through a pulley on the bed-foot, and bears a weight of 20 pounds. A second strip runs along the sole of the foot to the toes, and forming a loop back to the ankle. To this loop a cord passes from a pulley directly above, and to the other end of the cord is attached a 2-pound weight. Other loops are placed around the leg, at positions varying with the seat and nature of the fracture. These support 4-pound weights, which fall over the sides of the bed and hold the bones straight. The *x*-ray picture is attached to the foot of the bed so that the exact seat of fracture is easily referred to at any time.

REVIEWS.

DISEASES OF THE INTESTINES AND PERITONEUM. By Prof. D. Hermann Nothnagel. Edited with Additions by H. D. Rolleston, M.A., M.D., F.R.C.P. Second Edition, Thoroughly Revised. Authorized Translation from the German under the Editorial Supervision of Alfred Stengel, M.D. W. B. Saunders Company, Philadelphia, 1907. Price $5.00.

This exhaustive work of over one thousand pages, originally written by Professor Nothnagel, edited by Rolleston in its first and second editions, now appears again, brought up to date by many additions which Rolleston has made. The chapters upon the chemical processes that occur in the intestines by Dr. Obermayer, and that upon Bacteria of the Intestines by Dr. Julius Mannaberg, still form the opening pages of the volume, which is so thorough and complete in every detail that it is almost too exhaustive for the use of the general practitioner, and forms rather a work of reference to which all who are interested in this subject must turn for authoritative statements as to major and minor points in connection with pathological changes in those parts of the body which are named in the title. From the beginning to the end the additions of Dr. Rolleston are not only numerous but excellent, and in many respects give us information of more value than the original text. Almost every page bears bibliographical references, and the volume closes with the finely printed bibliography, which covers twenty-five pages.

THE EAR AND ITS DISEASES. A Text-book for Students and Physicians. By Seth Scott Bishop, B.S., M.D., LL.D. Price $4.00 net. Philadelphia: F. A. Davis Company, 1906.

In this volume the author has rewritten and enlarged the section on the ear from his previous book on Diseases of the Ear, Nose and Throat. The original design of the work has not been changed, but much new material has been added, the most important of which are the first five chapters presenting the anatomy of the ear. The subjects are presented in a concise and clear manner, and the book is copiously illustrated, a large number of the illustrations being from preparations and sections made by the author.

In the treatment of acute mastoiditis,

we can hardly approve of his excessive use of ice, nor can we commend the employment of counter-irritation over the mastoid. His description of the mastoid operations would seem to indicate that he believes in conservatism, but this is a point to be commended rather than the unnecessary removal of almost the entire temporal bone, as practiced by some of our more radical operators. The chapter dealing with the most important subject of intracranial complications of disease of the ear covers only seven pages and certainly is not up to the standard of the remainder of the book. The chapters dealing with the effects of constitutional diseases and drugs on the ear are particularly good.

The book is designed to meet the needs of the student and general practitioner, a purpose which it will amply fulfil. We can recommend Bishop's book as an admirable treatise on diseases of the ear.

S. MAC C. S.

DISEASES OF THE STOMACH. By Dr. I. Boas. Translated by Albert Bernheim, M.D. Illustrated. The F. A. Davis Company, Philadelphia, 1907. Price $5.50.

The work of Boas in investigating and treating diseases of the stomach is universally known, and the present translation into English of the fifth German edition will place this standard work in the hands of many practitioners who heretofore have not been able to employ it because of their lack of knowledge of the German language. The book is quite an exhaustive one, covering more than 700 pages, and contains not only an index of Diseases but an index of Authors as well. The translator has made a considerable number of annotations and additions to the text in which he expresses his own views very clearly. The volume, it is needless to say, is a standard work which can be read and studied with much advantage not only by the general practitioner but by the specialist in diseases of the stomach; it is well printed and deserves to be well received.

THE TREATMENT OF THE DISEASES OF CHILDREN. By Charles Gilmore Kerley, M.D. W. B. Saunders Company, Philadelphia, 1907. Price $5.00.

Dr. Kerley, who is the Professor of Diseases of Children in the New York Polyclinic Medical School and Hospital, has prepared this book for the general practitioner of medicine and not with the idea of supplying specialists in diseases of children or the undergraduate student of medicine with a book which would be particularly valuable to them. Most of the measures which are advised are those which are based upon his personal experience rather than upon contemporaneous literature. After some general considerations as to the methods of treating children, including their clothing and the general hygienic management of the young, with chapters upon the condition of the new-born and nutrition and growth, the various methods of treatment which are adapted to diseases of the gastrointestinal, respiratory, and circulatory systems are taken up. Then follow articles upon the contagious diseases, or, to speak more correctly, the infectious diseases, the urine, the genitals, diseases of the nervous system and diseases of the skin, and then the diseases of special organs, such as the ear. Curiously enough, there is no chapted devoted to diseases of the eye, and equally curiously, the chapter upon the contagious diseases is separated by more than 115 pages from that upon the infectious diseases. We note with interest that cyclic vomiting is classed as one of the infectious diseases, as is also acute general peritonitis, tuberculous bone disease, and dactylitis. Surely this must be an error. The volume closes with a discussion of the temperature of children and the methods controlling it when it becomes febrile, with a discussion of gymnastic therapeutics, and finally a list of drugs for internal and external use. This book contains a very large number of useful hints from which practitioners may gain much that is of value.

CORRESPONDENCE.

LONDON LETTER.

BY G. F. STILL, M.A., M.D.

The most recent event in the hospital world of London is the opening of a large new block of buildings at St. Bartholomew's Hospital, which had already the distinction of being one of the largest hospitals in the metropolis. The new portion is a six-story building, which is to serve as out-patient and casualty department, and contains also rooms for the resident medical officers. This, of course, sets free a considerable part of the older buildings, and no doubt these will be quickly utilized; for since the fiasco of the proposal to centralize all teaching in the preliminary subjects of medical study in London, St. Bartholomew's Medical School has refused to take any part in the scheme and will remain a complete school for teaching in all subjects of the medical curriculum. One of the arguments advanced in favor of the now wrecked scheme was that if the hospitals would give up teaching the elementary scientific subjects, much valuable space in these institutions would be set free for medical research, but this argument carried less weight than did the possibility of having less students, and less fees, so several of the larger hospitals withdrew from the scheme, which was thus rendered futile for those hospitals which had already pledged themselves to it.

The ceremony of opening the new building took place a few days ago, when the Prince and Princess of Wales performed the function, and the Prince made an interesting speech, in which he stated that this hospital, now nearly 800 years old, was founded by the court jester of Henry I., and had been in favor with all monarchs since, except perhaps Henry VIII., who had thoughts of turning it into cash. The Prince referred to the outcry which there was a short time ago in favor of removing this hospital to some other part of London, and said that "Bart's" is where it ought to be, and where it is likely to remain. The Lord Mayor and sheriffs of London attended in state, and Lord and Lady Ludlow, the former the treasurer of the hospital, received the chief visitors.

The Royal College of Surgeons has just reëlected Mr. Henry Morris as its president; this is his second year of office. Mr. Rickman Godlee and Mr. Watson Cheyne are the two vice-presidents.

The medical profession will be somewhat disorganized in London during the next two weeks, for next week the British Medical Association is to hold its annual meeting, this year at Exeter; while the following week the Second International Congress on School Hygiene is to be held in London under the presidency of Sir Lauder Brunton; and in connection with both these meetings there is to be the usual series of mild dissipations—picnics, garden parties, and receptions. At the Exeter meeting there is to be, I hear, a presentation of the Middlemore prize for recent work in connection with contagious diseases of the eye; the prize is adjudged to Mr. Sidney Stephenson. Next week also the British Association for the Advancement of Science is to hold its annual meeting, which is to be at Leicester. One of the subjects to be discussed is the physiological and therapeutic uses of alcohol. One would have thought this threadbare subject—threadbare only as a cloak for exaggerated statements of faddists—had already become tedious, but Sir Victor Horsley and Prof. Sims Woodhead are to the fore again. One wonders whether the sameness of proceedings will be varied by the presence of any of those gentlemen who signed the manifesto in favor of the occasional usefulness of alcohol a few months ago.

An interesting advance in anesthesia has been made lately in the production of analgesia by injection of various drugs into the

spinal theca. The chief exponent of this method in London at the present time is Mr. Canny Ryall, who, however, employs a different drug from that mostly used. Hitherto stovaine has been used for this purpose, but Mr. Ryall employs novocaine. Amongst the operations which have been performed with this form of anesthesia are such major procedures as prostatectomy and appendicectomy. The skin is frozen in the lumbar region and novocaine then injected into the spinal cavity; in five minutes all feeling of pain is obliterated in the abdomen and lower limbs. The patient who was undergoing prostatectomy chatted during the operation, and was able to talk and laugh at the end of it. It is stated that there is little or no shock from operation; and the analgesia can be maintained, Mr. Ryall says, for fully six hours.

Professor Osler recently spoke at a meeting in support of a consumption sanatorium, and stated that 55,759 persons died in England and Wales from tuberculosis during the year 1905. He thought that open-air treatment might be carried out successfully at the patient's own home if sanatorium treatment was not available. He said that the public has an undue fear of such places; there are fewer tubercle bacilli in a square yard in a well-managed sanatorium than in any other place in the community. An excellent step has been taken by the London County Council recently in deciding to establish an open-air recovery school at Plumstead, one of the suburbs of London, for the children of the poor.

The Therapeutical Society, which like so many others of its fellow societies has recently become submerged—or should we say has blossomed forth?—into a section of the Royal Society of Medicine, made an excursion to Oxford this month, where it need hardly be said the Regius Professor, Dr. Osler, added greatly to the pleasure of the therapeutists by his genial presence, and by welcoming them at a garden party at his own house.

The month has brought heavy losses to the profession by death. Three physicians of world-wide fame have passed away—two in this country and one in Paris. Sir William Broadbent, who was perhaps best known in connection with his work on heart disease, had attained to high honors: he was Physician Extraordinary to Queen Victoria and Physician in Ordinary to our present King. Honorary degrees were conferred on him by English and foreign universities, and in addition to the baronetcy, which was conferred upon him by Queen Victoria, he had been honored in France with the insignia of a commander of the Legion of Honor. As a teacher and clinician he was held in the highest regard by the students of St. Mary's Hospital, to which he was for many years physician. He died this month at the age of seventy-two years.

Sir William Gairdner, who was Physician in Ordinary to the King in Scotland, had reached the ripe old age of eighty-five years when he passed away. As professor of clinical medicine at Glasgow he was recognized as one of the foremost physicians of the day, and his writings were numerous and valuable.

The third physician to whom I referred was not an Englishman, but his name was honored in this country by all who are specially interested in diseases of children, so that I cannot refrain from some reference to him—Professor Grancher, who was clinical professor of children's diseases in Paris. He has just passed away after a long life spent chiefly in attempting to improve some of the conditions of child life in France, especially to procure open-air schools for children.